Chapter Six

PRICING OF WOOD IN FOREST AUCTIONS

In the previous chapter the operational side of the auction was considered. It was seen how wood was made available for auctions through felling, conversion, transportation and sales depots. In this chapter the system of pricing of wood in forestry working will be seen. The price of the wood fixed by the department varies according to the user of that wood. The Department determines the floor or 'Upset' prices, for its material put to auction. Wood is sold on 'royalty' basis or on 'scheduled rates'. Wood is also supplied free of cost. Attempt will be made here to see how these prices relate to auction prices and in turn to the market prices. The auctions of standing crop and auction of wood in sales depots will be examined separately.

Pricing Methods of Wood:

Wood produced in government forests is disposed of in many ways. Trees are sold standing in coupes. Major portion of the wood produced is brought to the sales depots for auctions. Some production is supplied to other departments on department-to-department basis. Part of wood produced is supplied to industries. For all these categories there are different methods of pricing the wood. For example, the
standing crops are evaluated and a stumpage price is worked out before auction. Timber and firewood lots in sales depots are offered for sale after working out their upset prices. Departmental supplies are done on scheduled rates basis. Industries obtain their raw materials on royalty basis. Each of these methods of pricing will be discussed below:

Pricing of Standing Trees:

The estimated price of standing tree is called as stumpage value. It is normally done by the universally accepted principle of "Conversion Return" or "Residual Approach". The starting point for the determination of stumpage value is the selling price or the market price for the products that can be obtained from the trees. From this price all the costs of conversion - from felling to processing and manufacture of that product - are deducted. This also includes whatever amount is necessary to repay the owner for his contribution. The balance is the residual value or the Upset Price in forestry. Duerr explains it this way: "General form of conversion approach is that the appraisal value of a commodity at stage-A is equal to its directly estimated value of Stage-B minus the cost of converting it from stage A to B". It is thus fundamental that the market price for the product to be obtained

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2/ Project Report (Reprint of the Technical Note No 8, FDB, May 1975) PDCM Ltd, July 1977
from a tree is known beforehand. In India, it is conventional in forest departments, to consider the market price of the primary product such as a timber log or firewood. From this the Upset Price is worked out. Over and above, the purchaser is given a margin of 20% as an incentive in the determination of the Upset Price by the conventional formula (Upset Price = \[ \frac{4}{5} (M - C) \]) where \( M \) is the Market Price and \( C \) is the Total Cost of Production.

The Forest Development Corporation of Maharashtra had tried to decide rational price of timber for its crops in 1971-72. A regression equation was established between the average sales prices of logs and girth of corresponding trees which gave the logs. The equation arrived at was as follows:

\[
Y = a - bx + cx^2
\]

\[31.51 = 2.13x + 0.03916x^2,\]

where \( Y \) is the value of standing tree in rupees and \( x \) is the girth at breast height. It is also experienced that the "Conversion Factors" or tariffs used by the Department for estimating the outturn from standing trees give under-estimates. Thus a purchaser of a standing forest crop gets considerable margin in his working. Maslekar also found that the timber contractors enjoyed a profit margin from 18 to 40% in their business of extracting timber and other wood from forests. Margin is higher when contractor has his own saw mill for further processing of round logs.

3/ Marketing of Wood Products in Maharashtra: AR Maslekar: 1980
Assessment of Auction of Standing Trees:

There are different opinions in favour and against contractors' working in forestry. Sagreiya⁴/ feels that working through contractors gives higher profits provided strict supervision is exercised on their working. Sharma⁵/ thinks that this system of disposal of trees in the forest suits the forest department best. This is true to a certain extent. Department does not have much concern after it sets the crop and auctions the crops. Everything else from felling to taking the wood to market is the contractors' responsibility. The supervision as advocated by Sagreiya is rarely obtained. This has resulted in many malpractices and situation is such that today over-exploitation and other such shortcomings of forestry working are being credited to the contractors' working. NCA⁶/ has strongly recommended that as far as possible no sale of standing timber in forests should be made. After departmental logging, either through employment of local labour or through labour cooperatives, all timber should be brought to a sale depot outside forests and sale should be held at that point only. A very strong concern was also expressed by the Prime Minister while inaugurating a recent meeting of the Central

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⁴/ KP Sagreiya: Ib id: p 222
⁵/ LC Sharma: Ib id: p 136
⁶/ NCA42-15-1: p 185
Board of Forestry in these words: "The reckless and indiscriminate felling of trees, for immediate profit by contractors .......... has proved disastrous". The contractors have been found to have caused over exploitation, pilferage and exploitation of local tribal labourers. Under the Government's policy the contractors who exploit both forests and forest labourers are to be eliminated according to the recommendation of the Central Board of Forestry which is the highest policy making body in the country. Interestingly Clawson has also found similar problems in USA in working of their National Forests by the US Forest Service. He finds that the major part of the timber management expenditures are in connection with timber sales (mostly of standing trees). "If the Forest Service, by employing labour force, were to cut trees, transport them to a reasonably central place and sell them by auctions, better net prices could be obtained for logs, and the service would have better control over the methods of logging and their impact upon the environment".

**Auction Prices of Standing Trees:**

It is generally believed that the buyers of standing trees in the Forest Department's auction earn handsome profits and the Department normally is deprived of its legitimate share of returns. In government owned forests in the country

1/ Minutes of Central Board of Forestry Meeting 25 Aug 80; New Delhi: Central Forestry Commission GOI - Ministry of Agri.
the forests are taken as 'God given'. The cost of their formation is therefore unknown and therefore not taken into account. We have already seen how the departmental upset prices are worked out. They also involve an incentive to the purchaser in the deal. Guise explains it this way: "The purchaser of stumpage (standing trees) is entitled to a fair margin of profit on the money he invested. Therefore the stumpage figure (timber appraisal) must be reduced by some reasonable margin. In such operations, the fair margin is usually placed at 20 to 30%. This percentage of profit margin provides for: (i) interest on capital invested, (ii) reward for personal ability of the operator, and (iii) allowance for the risks to which operations of this type are subject". Guise also suggests a refined formula for estimating the stumpage value or Upset Price which is

\[ SV = SP - (LC+MC) - P(LC+MC), \]

where \( SV \) is the Sale Value of Standing Timber (for the owner), \( SP \) is Selling Price of final product, \( P \) = Percent of profit margin, \( LC \) = Logging Costs, \( MC \) = Milling Costs. It is also noted by Guise (p 283) that, "Sales of this type (stumpage) have been extremely common .......... and in the majority of cases, the

owner has probably received considerably less than the true value of his timber”. Davis\textsuperscript{10} explains the concept as, "the value of standing timber is calculated as the difference between selling value of the products produced from it and the stump-to-market processing costs, including an allowance for profit and risk. The cost of growing timber does not enter in it directly at all. Instead the process determines what is available to cover the costs of timber production. Stump-age appraisal follows the same general pattern as that for any other raw material, where the demand is a derived one from the products that can be made from it". Davis further concludes (p 390) that the stumpage-appraised prices are usually below, often substantially of the market value in case of rising prices and equal to or slightly above the market prices in declining market. \textsuperscript{11} Mead has proved that appraised prices are unrealistically low compared to fair market prices.

Above evidence shows that the auction of standing trees from Government forests, is not beneficial to the department, though it may be administratively easy and convenient. It deprived the Department of its legitimate share of returns. It virtually underwrites contractors' working at the cost of society. It also involves harm to the forests and exploitation of forest labourer. Auction of standing trees is therefore not socially acceptable and also not economically justifiable.

\textsuperscript{10} KP Davis: Forest Management: p 382
\textsuperscript{11} W J Mead: The Firm and It's Competitors: p.4
Pricing of wood on Scheduled Rate basis:

The Forest Department supplies timber and firewood from the forests to various other Departments and Public Sector Undertakings. Public Works Department, Railways, Defence Department, Heavy Industries, are some of these major customers. These supplies are made on the basis of scheduled rates worked out by the department. Such scheduled rates are based on the average highest prices obtained for a particular grade in last three successive auctions. This average price is added with a 10% charge towards supervision charges of the department. Appendix IV gives detailed scheduled rates prevailing in Maharashtra for the round wood and sawn timber. Following Figures 6.1 & 6.2 show the comparison of the scheduled rates with the actual market prices obtained in 1979-80 auctions at Ballarshah and Paratwada Depots in Maharashtra. Scheduled rates are generally lower than the auction prices for wood at most of the times, and therefore also below the current market prices.

Pricing of wood for supplies to industries on Royalty basis:

The Government encourages establishment of certain forest-based industries in the forest areas as a part of its policy of developing backward regions. Such industries are offered raw material like timber, pulp wood and bamboos at concessional rates. This rate is called as the Royalty. Royalty is cal-
culated as a 'residual price', similar to the Upset Price discussed earlier. At times certain kind of raw material, obtained from certain species of trees, is entirely reserved for specific industries. For example, wood from Semal, Khair and Haldúa-Kalam, is reserved in Maharashtra for matchwood, katha production and manufacture of textile accessories, and plywood, respectively. Such supplies are made on a long term basis. The initial lease period is twenty years in Maharashtra. The royalty is negotiated by a high level committee of Ministers of the government with the entrepreneurs. The rates of royalty are reviewed at three years' interval. In Maharashtra state seventeen industries like Paper Mills, Plywood, Matchwood, Veneer Manufacture, Textile accessories, Flush Doors, etc are supplied raw material on royalty basis. The royalty rates for them are: Teak Timber: Rs 3577 to 3850 per m\(^3\), Miscellaneous Timber Rs 175 to 400/m\(^3\) depending on size of logs, Teak lops and tops Rs 60/m\(^3\), Pulpable Mixed Hardwoods Rs 37.50/2m\(^3\) stack; Khair Timber Rs 360/m\(^3\), Semal wood Rs 200-400/m\(^3\) in accessible areas; and so on. The royalty rates are always lower than the market rates at a given time, and remain so over a long time.

that there is a lot of subsidized supply of timber and forest material to rural population ........ In the name of encouraging the industry forest material has been leased out for longer period at a very nominal rate of royalty. The present supply of forest materials to the forest based industries is heavily subsidized". The government has also found that the industries who obtain raw materials from forests on royalty basis are rather prodigal in their use.\textsuperscript{13} The NCA therefore recommends that the price of forest produce for the industries should be so fixed as to pay for the cost of clearfelling and plantations, maintenance of production forests, and leave a profit. The situation can be very well explained by looking at the supply of bamboos to Ballarpur Industries Ltd for their Ballarshah Paper Mill in Chandrapur District in Maharashtra. The Mill was established in 1952 and obtains bamboos on a royalty varying from Rs 17 to 33 per metric tonne (400 bamboos, Air Dry Weight). Revisions of royalty were due in 1975. The Forest Development Corporation which operates in the same area, called tenders on a national basis for sale of bamboos from its areas in 1980. The price quoted in the highest tender was Rs 230/tonne, by a mill situated in Karnataka, some 600 kms away from Chandrapur.

\textsuperscript{13} Govt of India: Country Report for 8th World Forestry Conference, Jakarta: December 1978
Rational Pricing of Wood in Sales Depots:

The NCA has already recommended that the price of forest produce should be so fixed as to pay for the cost of clear-felling, plantings and maintenance of production forests. Over and above, they should leave a profit. A good example of the pricing as suggested by NCA is found in the Timber Sale Depot of Madhya Pradesh Forest Department at Delhi. The round and sawn wood of teak, sal and important miscellaneous species is brought to this sale depot from certain divisions of South-East Madhya Pradesh for sale. There is a good demand for such material in Delhi and other markets in Punjab and Haryana. The Depot was established in 1974. In this Depot the Upset Price has following components: (a) Base Price: This is fixed on basis of the highest price obtained in the immediate last sale in the parent forest division from where the material was despatched to Delhi Depot, (b) To this base price, following are added: (i) MP. Sales Tax and Turnover Tax (19% and 1% respectively); (ii) Handling charges at the despatching end including loading in railway wagons; (iii) Handling charges at Delhi (Rs. 42/m³ in 1979); (iv) Agent's Commission (Rs 0.06 per Turnover of Rs 100); (v) Establishment charges for the entire Delhi Office and Sales Depot, worked out on cubic metre basis; (vi) Interest on the capital locked in purchase
of depot land in Delhi, also worked on per cubic metre, (vii) Railway freight for transport of the material, (viii) Profit at 12% to 15% on the total expenses. The total of a+b makes up the government's Upset Price. The system has worked well and this special Sales Office in Delhi handled wood worth Rs 1 crore in 1979-80 and contributed Rs 15 lakhs to the Department in that year.

Government Prices and Share of Overheads:

In a governmental system of working, the overheads become an important component of costs. Compared to the private traders and contractors, the overheads in the departmental and forest corporation working are generally high. Major share of the overheads is accounted for by staff salaries and allowances. This naturally reflects in the Upset prepared in the departmental working. This is especially so where certain forest divisions and all the Project Divisions of FDCs are treated as "commercial" units for accounting purposes. Same is the case with the Government Saw Mills and the Integrated Processing Units. Maslekar\(^{15}\) found that in Allapalli Forest Division of Maharashtra State, which is a Commercial Unit, the total cost of production of a Grade I and II Timber, works out to Rs 513-58 (1979-80) per \(m^3\) at Allapalli. In this, the share of royalty (residual price

\(^{15}\)AR Maslekar: Ib id
based on an average price of previous auctions) is Rs 395-77/m³. The actual working cost is Rs 117-81/m³ out of which the staff salaries, allowances and other overheads amount to Rs 91-46 or 77.6% of the cost of production, exclusive of royalty. Appendix X (a) gives the details. In FDCM, the landed cost (excluding royalty) of superior timber and pulpwood, obtained from the areas near Allapalli, comes to Rs 207-50/m³. This includes Rs 58-93/m³ fixed costs, Rs 28-57/m³ variable costs and Rs 120/m³ transport costs (over an average lead of 120 km) to Ballarshah. If one excludes the transport, the cost of production in the forest at Allapalli comes to Rs 87-50/m³. The share of establishment expenses and overheads is Rs 40-36 per m³ or 46.1%. When depreciation on dead stock, buildings, machinery and interest on capital employed are included the total Fixed Costs make up 67.3% of the total cost of production. Appendix V(b) gives the details. There is a feeling among timber traders that the prices of wood in the market have gone up after the nationalization of the timber trade by the government which is mainly due to the high cost of production in the departmental and forest corporation working.

Factors that affect Timber and Wood Prices in Auctions:

Prices for wood in any auction depend on many factors as explained by Maslekar. Such factors are: (i) The
species: Teak, Sal in hardwoods and Deodar in conifers are considered the 'Gold' of timber market. (ii) Location of forests from where the material is obtained. Allapalli (CP) Teak has more value than MP Teak. MP Teak fetches better prices than Melghat or Billimora Teak; (iii) Dimension of the logs; (iv) Quality of the wood; (v) Freshness of the material. Teak of one season old fetches more prices due to natural seasoning for structural use. But fresh teak has better demand for slicing; (vi) Time of sales: First sales after rainy season, sales near festivals (Diwali, Holi) have better demands. Sales nearer monsoon have low demand; (vii) Money situation in the market in general; (viii) Availability of railway wagons, trucks, etc for speedy movement; (ix) Quantity offered in sale. Larger quantities where there are wider choices for purchaser, fetch better prices. Purchasers also try to make up at least one truck or one wagon load in a sale; (x) Keenness of competition: Such competition can be due to many factors such as large demand for export, starting huge projects like Narmada Project, etc. Competition also depends upon composition of purchasers. When there are only 'local' purchasers there is a fear of rigging or 'ring' formation. Even one outsider makes a difference. (xi) Accessibility: More evident in case of standing timber. (xii) Purchasers' Confidence in measurement of the material. (xiii) Agency of production: Generally, FD and FDCM material has better
response than FLOCS material. (xv) Terms and Conditions of Sale: Instalments for payment, period offered for lifting the lots, etc affect prices. Longer periods fetch better prices but this is double-edged knife, as deferred payments delay returns. (xv) Certain Policy Decisions: In 1979-80 Karnataka banned movements of its timber outside the state. Maharashtrian sales fetched better prices from the purchasers of southern states. FDCM's decision in 1978 to convert firewood into charcoal departmentally pushed up firewood price. (xvi) Certain exigencies affect prices: Blockade in Assam of plywood since a year have enhanced plywood prices manifold. Teak demanded in Middle East has skyrocketed its prices in domestic market. (xvii) Local specific uses: Curved Teak pieces of certain dimensions do not fetch any offer in Chandrapur, but in Thane Circle they have high demand for ship-building. Khair wood prices of 90 cm girth and 85 cm length (called 'Thoomb') have good demand in Nasik market for the manufacture of bullock cart wheel axles. Coal mines are now demanding large quantities of mine sleepers in Chandrapur district. (xviii) Sales are affected by the attitude and personality of seller himself. As Kolbe 17 calls it "You gotta be an actor to conduct auctions successfully".

Correlation of Auction Prices and Material Attributes:

In the above auction we saw the different factors that affect the price responses of the bidders in an auction. Even if all other conditions are normal, the purchasers differ in their offers in relation to the wood offered for sale. With a view to find out as to which characteristic of the material obtains better prices some correlations were worked out. For this purpose, the coefficient of correlation between the auction prices and girth of logs, prices and lengths of logs, prices and number of logs in a lot, and prices and the number of lots in a sale were found out. The data from the latest sale results of the Ballarshah Government Timber Depot were used. The sales were held in October 1979. Data was for Teak timber of Grade II. The exercise indicates that (i) there is a high correlation \((r = 0.98 \text{ and } 0.99)\) between auction prices and the girth and length of logs respectively. (ii) Correlation between the number of logs offered and their prices is not significant \((r = 0.18)\). (iii) The number of lots in a sale and auction prices had significant correlation \((r = 0.46)\). These are however indicative results. A multiple regression approach may throw better light on these relationships. Appendix VI gives the detailed calculations. Maslekar\(^{18}\) found at Paratwada Depot that there is a belief with Forest Officers

\(^{18}\)AR Maslekar: ib id: p 80
in general that the longer the log lengths and larger their girths, the prices are more. This however is not always true. In Paratwada, this holds good up to lengths of 4-6 m class and girths of 90 cm and above. Logs of 90-135 cm girth and 3-4 and 4-6 m length fetched best prices for round timber provided they are at least 8 m³ in volume in a lot. This has a relation with a truck load. A similar exercise by Mehta & Maslekar\textsuperscript{19} where a step by step analysis of auction prices and nine different quality attributes was done, indicated that the girth and length of logs explained 73\% of the variance in price and girth alone accounted for 64\%. Sample was based on 264 lots offered and 184 lots sold. 57 purchasers were present for the sale out of which 43 were private owners.

\textbf{Auction Prices and the Market Prices:}

Wood is a producers' good and is a versatile raw material. As it moves towards the ultimate consumer the wood is processed at different stages, and changes different hands in the distribution channel. At each stage of processing and/or handling a price is added. It is, therefore, difficult to establish a clear relation between the prices obtained in a given auction at a government sales depot and the ultimate market price of the same material. The market price also depends on the use that the wood is put to. Appendix VII(a)

\textsuperscript{19} S C Mehta and A R Maslekar: Timber Sales Depot at Delhi - A New Approach To Timber Marketing - IIPM/IIMA Case - 1979
gives the market prices in a few selected markets. Even if it is assumed that a particular log of timber which is sold in an auction has fetched a certain price, its final market price, say in local market, at a private traders' shop (who purchased the log at auction), in the same form as before, can not be same. Because the marketing expenses of the trader and his margin of profit will be added to the auction price. Thus in any case it can be seen that the auction prices are lower than the market price at a given time. Mehta and Maslekar, referred above, gathered that a log sold at the Delhi Sales Depot was quoted double its auction price in the market, on the same day. This needs to be substantiated by going into it in details.

**Government ownership and the Prices of Forest Produce:**

The ownership of the forests and their products have an important bearing on the prices obtained in the auctions. In pricing forest products including wood, the Department needs to follow the dictates of State Policies. Davis explains this as, "with public agencies, this objective (of getting the highest possible price on the current market) tempered by policy and business considerations, making the total objective more nearly conform to the economic concept of a *functional price* which essentially means a price that will accomplish a desired purpose in selling a commodity". And the desired purpose of

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20/ KP Davis: Forest Management: 1966: p 385
forestry is put by the NCA in these words, "The planned output of forest product, to meet the needs at a price that the community can afford, will be the forestry's substantial contribution to the removal of poverty, to the agricultural progress, and to the creation of employment opportunity to large sections of tribal and other population living in these areas". Viewed in this perspective, and considering the fact that the Department (FDCM, and FLCS included) endeavours to ensure a keen competition by advertising its sales widely, and attempts at offering the wood in the forms desired by the buyers by grading and sorting, one can conclude that the prices obtained in the auctions manifest fair share of the market prices to the Government and they are the best prices obtainable in the given situation, Ceteris paribus.

Auction Prices and the Time of Sale:

The time of sale is important in auction. To find the effect of time on auction prices, the sales data from four different auctions held in the months of March 1979, October 1979, December 1979, and March 1980, at Ballarshah Depot and of November 1979, and February 1980 at Paratwada Depot in Maharashtra, was analysed. Graphical analysis indicated certain relationships, Figure 6.3 & 6.4 show that in both the

\[21/\text{NCA: Ib id: 41.1.11}\]
AUCTION PRICES FOR TEAK TIMBER (GRADE I, LENGTH CLASS 4-6 ft) IN DIFFERENT SALES IN A YEAR IN BAILARSHAH GOVERNMENT TIMBER DEPOT

**Fig 6.3**

AUCTION PRICES FOR TEAK TIMBER (GRADE II, LENGTH CLASS 3-4 ft) IN DIFFERENT SALES IN A YEAR IN BAILARSHAH GOVERNMENT TIMBER DEPOT

**Fig 6.4**
depots, sales held in months of October to December yielded better prices than the sales held in February to March, in a year. A conclusion needs to be drawn based on more such data, but above analysis supports the trend in timber market. Timber contractors say that they fetch the best prices in 'Bhadrapadi' or 'Bhado' sales, (September-October) and every forest contractor endeavours to catch these sales in time. The market is generally starved during rainy season and hence the prices for the season's first sales are higher. On the other hand, money position in market is tight in February-March due to agriculture harvesting season. It is easy in April and early May. Sales after early May fetch low prices. Firewood is the worst sufferer if offered in these months. If not transported out of forest and not made into charcoal, firewood deteriorates in monsoon. There is also the danger from fire and pilferage.

Conclusion:

There are four different methods of pricing the wood and other forest products in Indian forestry working. These depend in turn upon the method of wood disposal. Stumpage value for standing trees is determined when the crop is auctioned standing in forests. Scheduled rates are worked out for supplies of wood to other government departments and public-bodies. Royalty is fixed by negotiation when wood
is supplied to certain forest based industries as raw material. Upset prices are made for the wood produced and sold at government sale depots. It was seen that the auction of standing forest crop to contractors involves sacrifice to government and support to private trade. Scheduled prices can be justified because they are the imputed prices of the material produced by government and transferred to other government wings. Royalty system has been found to involve a subsidy to industries. This also involves a prodigal use of raw material by the industries at the cost of the public exchequer. The auctions of material brought and sold at the sales depots offer the best available means for the government forest department to realise the fair share of the market value for its wood. In that sense, the auctions provide the most efficient mechanism for the Forest Department to earn its revenue, in the given situation of the forestry system in India.