PART III

FOREST UTILIZATION
CHAPTER V

MAJOR FOREST PRODUCE

Forest produce are classified into major and minor produce. Wood products i.e., timber and firewood are known as major and all the remaining produce as minor forest produce.

TIMBER PRODUCTION

Statistics of Timber Production

The importance of timber is obvious as one often confuses it with the forest itself. Timber alone collects about 39.34 per cent of the total forest revenue in the region. The average annual timber production of the region is calculated as 445,200 m³ (1966-69). In the year 1947-48 timber production was only 39,400 m³ which increased to 483,790 m³ in 1968-69. The revenue obtained from timber was only ₹3.4 lacs in 1947-48 which increased to ₹379.4 lacs in the year 1968-69. During this period the production increased by more than 12 times and revenue by 112 times.

The production of timber and revenue obtained from it may be visualised from the table 5.1.

Though the trend of timber production was positive the rate of increase varied from period to period (Fig. 23). The rate of production was maximum in the First Five Year Plan, which was probably due to the implementation of a five year plan for the first time under National Development Programme. In the following years the 'number of times increase' decreased
CHHATTISGARH REGION: TREND IN TIMBER PRODUCTION

BY TYPES

BY AGENCIES

INDEX
Types of timber
(1000 M³)

INDEX
Agencies of exploitation
(1000 M³)

Source:
Annual Administrative Report (form 19)
of Divisional Forest Offices

Fig. 23
Table 5.1

<table>
<thead>
<tr>
<th>Year</th>
<th>Average timber production (000 m³)</th>
<th>No. of times increase</th>
<th>Revenue (lac Rs.)</th>
<th>No. of times increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1947-48 - 50-51</td>
<td>109.78</td>
<td>-</td>
<td>2.14</td>
<td>-</td>
</tr>
<tr>
<td>1951-52 - 55-56</td>
<td>217.32</td>
<td>1.98</td>
<td>3.86</td>
<td>1.80</td>
</tr>
<tr>
<td>1956-57 - 60-61</td>
<td>306.13</td>
<td>1.41</td>
<td>10.03</td>
<td>2.60</td>
</tr>
<tr>
<td>1961-62 - 65-66</td>
<td>389.12</td>
<td>1.27</td>
<td>25.56</td>
<td>2.55</td>
</tr>
<tr>
<td>1966-67 - 68-69</td>
<td>445.20</td>
<td>1.17</td>
<td>35.80</td>
<td>1.40</td>
</tr>
</tbody>
</table>

(Source: Annual Administrative Report of Forest Divisions)

The rate of revenue increase was maximum during the Second Five Year Plan, which was because of variations in the prices of timber produce.

Table 5.2 shows that North Bastar, Kanker, Bilaspur, West Bastar, and South Durg Divisions are the first five ranking divisions in timber production. Considering the timber outturn per km² of forest area for the various Divisions, the median value is 5.77 while the upper quartile value is 11.23. Assuming the median value to be 100 the per km² outturn of all the Divisions was converted into index numbers, called the 'timber outturn index'. The first five Divisions in descending order of this index are Bilaspur (311), South Durg (246), Kanker (239), Changbhakhar (209), and North Durg (201). These Divisions are also producing more timber than the average production of the region (7.17 m³/km² of forest). It is...
Table 5.2

CHHATTISGARH REGION: OUTTURN OF TIMBER
(1966-67 - 68-69)

<table>
<thead>
<tr>
<th>Forest Division</th>
<th>Timber outturn (000 m$^3$)</th>
<th>Timber outturn (m$^3$) per km$^2$ forest area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. North Raipur</td>
<td>28.57</td>
<td>10.37</td>
</tr>
<tr>
<td>2. South Raipur</td>
<td>10.49</td>
<td>4.66</td>
</tr>
<tr>
<td>3. East Raipur</td>
<td>21.21</td>
<td>8.34</td>
</tr>
<tr>
<td>4. North Durg</td>
<td>32.13</td>
<td>11.61</td>
</tr>
<tr>
<td>5. South Durg</td>
<td>33.50</td>
<td>14.20</td>
</tr>
<tr>
<td>6. North Bastar</td>
<td>53.99</td>
<td>11.23</td>
</tr>
<tr>
<td>7. South Bastar</td>
<td>16.43</td>
<td>3.93</td>
</tr>
<tr>
<td>8. East Bastar</td>
<td>32.65</td>
<td>7.86</td>
</tr>
<tr>
<td>9. West Bastar</td>
<td>34.61</td>
<td>6.49</td>
</tr>
<tr>
<td>10. Kanker</td>
<td>52.24</td>
<td>13.80</td>
</tr>
<tr>
<td>11. Bilaspur</td>
<td>37.39</td>
<td>17.97</td>
</tr>
<tr>
<td>12. North Bilaspur</td>
<td>15.43</td>
<td>2.64</td>
</tr>
<tr>
<td>13. Raigarh</td>
<td>10.23</td>
<td>2.89</td>
</tr>
<tr>
<td>14. Jashpur</td>
<td>7.21</td>
<td>2.14</td>
</tr>
<tr>
<td>15. North Surguja</td>
<td>10.21</td>
<td>2.31</td>
</tr>
<tr>
<td>16. South Surguja</td>
<td>11.65</td>
<td>3.29</td>
</tr>
<tr>
<td>17. Korea</td>
<td>10.74</td>
<td>5.04</td>
</tr>
<tr>
<td>18. Changbhakhar</td>
<td>26.52</td>
<td>12.06</td>
</tr>
</tbody>
</table>

Total of the Region 445.20 7.17

(Source: Annual Administrative Report of Forest Divisions)
obvious from an inspection of the table that the forests surrounding the plain areas are exploited more. The next five Divisions are North Bastar (195), East Raipur (145), East Bastar (136), West Bastar (112), and Korea (87). These Divisions are rich in forest wealth. The table reveals that the forests of Bastar and Surguja Districts are producing more timber than others, since they are rich in forest wealth.

The author has analysed three factors, viz. the revenue obtained from timber production, transport system of the region, and forest coverage which can influence the production of timber of any region (Fig. 24). While considering the timber production and revenue obtained from timber per km\(^2\) forest coverage, the value of \(\rho\) (Spearman rank order correlation coefficient) (Gregory, 1964, 181-184) comes to 0.31. It shows a positive correlation between the two. The region collects about Rs. 360 lacs or Rs. 557 per km\(^2\) of forests (1966-67 - 68-69) annually. In fact revenue is and was a major attraction for the timber production. East Bastar (366, i.e. the Revenue Index), South Bastar (253), West Bastar (196), Kanker (163), and South Raipur (163) collect more revenue (per km\(^2\)) than others. These Divisions are rich in more valuable timber species like teak and 'sal'.

Now we shall consider another factor, i.e. the transport system (Length of forest roads per km\(^2\) forest area). Forestry is the economic competitor of transportation, (Greeley, 1925, 10). While relating the 'transport index' with 'outturn index' the value of \(\rho\) comes to 0.14. It shows a positive correlation. And Greeley claims that the true measure of timber
CHHATTISGARH REGION: INFLUENCE OF REVENUE, TRANSPORT AND FOREST AREA ON TIMBER PRODUCTION

1966-69 AVERAGE

INDEX

Timber production (in m$^3$)
per Km$^2$ forest area

Max
Upper quartile Rs. 1071
Median 476
Lower quartile 292
Min 173

Revenue of timber obtained per Km of forest area 82
Length of road per Km of forest area 340
Km of total area

Forest area per Km$^2$

Boundaries: State
District
Forest Division

Source Divisional Forest Offices

FIG 24
supply is not quantity but availability (Ibid, 9). The first five Divisions having comparatively good transport system, are Bilaspur (324, i.e. the Transport Index), Changbhakhar (286), South Raipur (257), North Durg (229), and South Surguja (162). In these Divisions, the production of timber is comparatively higher.

The third factor, i.e. the distribution of forests shows a negative correlation. It means that the forest distribution has got no control over timber production though it is a source of timber. The value of \( \rho \) comes to -0.03.

We may, therefore, conclude that revenue and transport system of the region are important factors affecting the timber production, while the distribution, of forest shows a negative factor. We may get a combined effect of these factors. On the basis of all the indices we obtain an 'average index'. This is correlated with 'outturn index'. The value of \( \rho \) comes to +0.34. While taking an average index of revenue and transport system, the value of \( \rho \) comes to +0.40. Both the results are positive but, the first result is less significant because of negative effect of the area factor. The average index is highest in East Bastar (178). It is only due to the revenue factor. Other indices are less than 100. South Raipur (173) ranks second. It is comparatively an ideal Division in the region. All indices of the Division are more than 100. Good road system of Bilaspur Division (159) ranks it third. It also gets an advantage of revenue index. In Korea Division forests are 'sal' and mixed types. They collect lesser revenue but have good transport system and forest
CHHATTISGARH REGION
ANNUAL TIMBER PRODUCTION

BY TYPES
- Miscellaneous
- Sawn & square
- Poles
- Logs

BY AGENCIES
- Agencies of exploitation
- Others
- Purchasers
- Government

PRODUCTION IN LAC M³

YEARS

Source: Divisional Forest Offices

FIG. 25
coverage. Fifth in this order is West Bastar (150). Teak forests of this Division increase the revenue and have good forest coverage. The next five Divisions are South Bastar (131), North Durg (126), Kanker (116), North Raipur (106), and South Surguja (102) respectively. The index is lowest in Raigarh Division (62). Others in this category are Jashpur and South Durg (79), North Surguja (81), and East Raipur (82).

Trend of Timber Production

The forests of the region were never scientifically exploited during State regime, except in Bastar State. After Independence people are still enjoying concessions to exploit forest produce, which is harmful to the forests. Now, the Government wants to introduce scientific methods in exploitation. But forestry in India has received very little independent attention (Redman and Chandras, 1967, 154). The exploitation of forests is in transition stage at present. Plantation raising is a way towards recurring production from forests. All these conditions affect the timber production. The trend of timber production can be visualized and one can say that no trend is the trend of timber production (Fig. 25 and 26). Exceptional production had occurred in the years 1951-52, 58-59, and 62-63. After 65-66 the production decreased. This was a period before the nationalisation of timber by the Madhya Pradesh Government. Since the policies were not properly laid down, it caused a decrease in production. Clearings for afforestation is a cause which increased the production. Some fluctuations that occurred in the region are due to the above cause. On the other hand
CHHATTISGARH REGION
REVENUE FROM TIMBER

BY
- Others
- Purchasers
- Government

YEARS
- 1947-48
- 1950-51
- 1955-56
- 1960-61
- 1965-66
- 1969-70

REVENUE IN MILLION RS.
- 40
- 30
- 20
- 10
- 0

Source: Divisional Forest Offices
FIG. 26
revenue obtained from timber gradually increased, though 1952-53
and 1955-56 were depression years.

Relative Importance of Different Timber Produce

The exploitation of forests is being done by two
important agencies: the Government or the Departmental agencies
and the purchasers, others being the right holders and free
granters etc. Prior to the nationalisation of timber (10th Aug.
1970), purchasers were the major exploiters (Fig. 23b). About
64 per cent of the total production has been exploited by the
purchasers, whereas 32 per cent by the Departmental agencies.
Other agencies have little importance. They share only 4
per cent of the total timber production.

Most of the timber has been exported to other
regions of our country, because local markets have been chiefly
influenced by the general lack of purchasing power (Indian
Forester, 1932, 599). It is, therefore, important that most of
the timber should be in such form that it can be easily
transported. After felling and logging timber becomes ready for
export. About 57 per cent of the total timber production comes
in the form of logs (66-67 — 68-69). Timber poles are consumed
locally or exported to shorter distances, they share 22 per cent
of the total timber outturn. Now a days, sawn and square timber
has little importance in export. Only 1 per cent of the total
outturn comes as sawn and square. Remaining 20 per cent comes
as miscellaneous.

About 76 to 87 per cent of the total outturn of
timber of Bastar District comes in the form of logs. West Bastar produces about 87 per cent of its timber production as logs. Kanker, South Bastar, North Bastar, and East Bastar Divisions produce 83, 79, 78 and 76 per cent of the total outturn as logs respectively. The logs from Bastar District are mainly exported to Delhi, Punjab, Bihar, and Calcutta.

More than 88 per cent of the total outturn of Changbhakhar Division comes as poles. Other Divisions having high percentage of pole production are Jashpur, Raigarh, South Durg, and North Raipur. These Divisions produce 49, 40, 36, and 27 per cent respectively. Forests of these Divisions are mainly of mixed type, which produces good quality of poles.

Now a days sawn and square timber has little importance from export point of view. It shares less than 2 per cent of the total production. East Bastar produces the maximum volume in sawn and square form in the region. South Raipur produces the maximum per cent (16) in this form, because of two departmental saw mills at Nagri and Sankara, whereas East Bastar shares 13 per cent of its total timber production. Other Divisions producing sawn and square timber are North Surguja (1.37 per cent), South Surguja (1.29), and East Raipur (0.85).

The production of sleepers was mainly done during old days. The 'sal' forests of Raipur, Bastar, and Bilaspur Districts are the main source of sleepers. Now the use of iron sleepers has reduced the importance of wooden sleepers.
Table 5.3

CHHATTISGARH REGION: SLEEPER PRODUCTION (m³)

<table>
<thead>
<tr>
<th>Year</th>
<th>Broad Gauge</th>
<th>Metre Gauge</th>
<th>Narrow Gauge</th>
<th>Special</th>
<th>Scant.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1947-48</td>
<td>4,442.03</td>
<td>1,692.60</td>
<td>761.55</td>
<td>2,430.93</td>
<td>769.22</td>
<td>10,096.33</td>
</tr>
<tr>
<td>1951-52</td>
<td>5,268.30</td>
<td>2,247.25</td>
<td>318.93</td>
<td>1,607.30</td>
<td>-</td>
<td>9,441.78</td>
</tr>
<tr>
<td>1956-57</td>
<td>3,923.72</td>
<td>718.05</td>
<td>86.09</td>
<td>615.49</td>
<td>272.68</td>
<td>5,616.03</td>
</tr>
<tr>
<td>1961-62</td>
<td>1,537.51</td>
<td>881.39</td>
<td>433.21</td>
<td>1,607.73</td>
<td>94.93</td>
<td>4,554.77</td>
</tr>
<tr>
<td>1966-67</td>
<td>3,916.52</td>
<td>441.84</td>
<td>15.50</td>
<td>740.71</td>
<td>-</td>
<td>5,114.17</td>
</tr>
<tr>
<td>Average</td>
<td>3,817.62</td>
<td>1,196.23</td>
<td>323.05</td>
<td>1,400.35</td>
<td>227.37</td>
<td>6,964.62</td>
</tr>
<tr>
<td>Percentage</td>
<td>54.81</td>
<td>17.18</td>
<td>4.64</td>
<td>20.11</td>
<td>3.26</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(Source: Annual Administrative Reports of Forest Divisions)
About 55 per cent of the total sleeper production comes as broad gauge sleepers. Since, the Railway Department is a major consumer of sleepers and the length of broad gauge line is maximum, the consumption is naturally high. Next to this, the demand for special timber is high. The length of metre and narrow gauge lines is comparatively less. This reduces the demand of metre and narrow gauge sleepers. The trend of production actually fluctuates, because it is controlled by the demand.

Major Trees in Timber Production — Their Causes

Major trees in timber production are teak, 'sal', 'saja', 'dhaora', 'bija', 'haldhu', 'tinsa', 'bhira', 'dhaman', 'karra', 'shisham', 'khair', 'arjun', 'semal', 'garari', 'senha', 'salai', 'lendia', 'aonla', and 'khamhar'. Important pole species are 'karra', 'lendia', 'tinsa', 'shisham', 'dhaman', 'karra', 'aonla', 'tendu', 'dhaora', 'saja', and 'senha'. The details of these species have already been dealt with in Chapter III.

Influence of Agricultural Development on Timber Production

The forests were the main hurdle in getting agricultural land in this region. Whenever a forest area was allotted to agriculturists, they were not interested in timber production. But, whenever clearing is done by the Forest Department, it affects the timber production. On the other hand certain rights and concessions are given to the villagers or agriculturists to get their 'nistar' requirements from the nearby
forests by the Forest Department. They are allowed to remove timber of unprohibited species according to their needs, and it can be utilised in making their houses, agricultural implements, and carts, etc., but the produce cannot be sold or exported (Chakravarti, 1968, 32). As a whole the effect of this is not a matter of much consideration. The Forest Department should take care at the time of removal of timber species by agriculturists so that it should not be silviculturally harmful to forests.

Table 5.4

CHHATTISGARH REGION: TIMBER PRODUCTION BY RIGHT HOLDER AND FREE GRANTERS

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Years</th>
<th>Average annual Production (m³)</th>
<th>Per cent of Total Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1947-48 - 50-51</td>
<td>0.495</td>
<td>0.45</td>
</tr>
<tr>
<td>2.</td>
<td>1951-52 - 55-56</td>
<td>1.335</td>
<td>0.61</td>
</tr>
<tr>
<td>3.</td>
<td>1956-57 - 60-61</td>
<td>1.181</td>
<td>0.39</td>
</tr>
<tr>
<td>5.</td>
<td>1966-67 - 68-69</td>
<td>12.392</td>
<td>2.58</td>
</tr>
</tbody>
</table>

(Source: Annual Administrative Report of Forest Divisions)

As an agency of exploitation right holders and free granters share very little and exploit only 2.58 per cent of the total production. People are now interested in agricultural production rather than expansion of agricultural land. On the other hand the use of steel and R.C.C. decreases the demand of timber for house building.
Now, the practice of shifting cultivation 'Dahaya or Jolpod' is restricted to the tribal areas of Surguja and Bastar Districts. In Gollapalli reserve of the West Bastar Division people were formerly given free teak wood for their agricultural requirements and implements and allowed 'Dahaya or Jolpod' cultivation within the reserve place where it is useful silviculturally (Sharma, D.G., nd, 52). Even then it is a harmful practice for forests. The Government is now trying to stop this practice either by laws (Pandey, et al., 1971, 184-283) or by providing agricultural land to tribal people for settled agriculture.

About 3 per cent of the total production is being exploited by the right holders or free granter. About 39 per cent of this production comes in the form of logs, 56 per cent as poles, and the remaining as miscellaneous timber. Poles are mainly used for house building and agricultural implements. Therefore, production in the form of poles is high. We may conclude that exploitation by the right holders and free granter is not very significant in timber production. The important thing is that the exploitation should be properly taken care of by the Department, so that it is not harmful to the forest crops.

Influence of Transport Development on Timber Production

Roads provide outlets through which forest produce comes to the consumers. We have already mentioned that the transport system of the region has positive correlation with timber production.
The per km$^2$ timber production is comparatively higher in the plain Divisions. Here the greater length of forest roads is one of the causes of high production. The transport system of the region makes the forests approachable and helpful in exploitation. The greater density of forest roads in Bilaspur (0.34 km forest road/km$^2$), South Raipur (0.27), North Durg (0.24), and North Raipur (0.18) is one of the causes of high timber production. On the other hand, the forests of Bastar District have valuable timber species. But the production is comparatively low due to lack of forest roads. The length of forest roads in South Bastar is 0.04 km per km$^2$, North Bastar 0.06, East Bastar 0.08, and West Bastar 0.10. Since the forests of Surguja District were situated at a long distance from the railway line, it was not visited by timber merchants in the past (De Brett, 1909, 248).

Considering the case of North Durg Division the length of forest road was 412 km in 1961-62 — 65-66. It increased to 585 km in 1966-67 — 68-69. This increase was 42.10 per cent. During this period the timber production of the Division increased from 23,390 m$^3$ to 32,130 m$^3$, i.e. 43.22 per cent. During this period in North Bilaspur an increase of 5.36 per cent in forest roads was paralleled by 27.21 per cent increase in production. In South Durg an increase of 1.83 per cent in forest roads was more than matched by 68.88 per cent increase in production. In Bilaspur Division, a little expansion in road length of only 0.67 per cent saw an increase in the timber production by 113.29 per cent. These facts show an
importance of forest roads in timber production. But, their correlation does not appear to be of a high degree. While the two increases are nearly equal in North Durg Division, they are poles apart in South Durg as well as in Bilaspur Division.

FIREWOOD

Production

Firewood is a ubiquitous material in the region. It is an important source of energy used by almost all the local population. The region produces more than 250 thousand $m^3$ of firewood annually (App. XII). About 17 per cent of it is exploited by the Departmental agencies, 82 per cent by the purchasers, and 1 per cent by free granters and right holders. The maximum
firewood production comes from South Durg Division. It produces 72 thousand m$^3$ firewood annually, which is 28.85 per cent of the region's total firewood production. The nearness of the forests of this Division to the towns and market centres like Dalli-Rajhara, Durg, Bhilai, and Raipur etc. is a cause of its high production. North Durg Division produces 11.01 per cent of the region's total firewood, which is 72.23 thousand m$^3$ annually. Whereas South Raipur Division produces 25.77 thousand m$^3$ firewood annually, it shares 10.29 per cent of the total production of the region. Kanker, Bilaspur, East Bastar, North Bilaspur, North Bastar, Raigarh, North Raipur, and Korea Divisions are producing more than 1 per cent. Their production is 8.55, 7.78, 5.88, 5.35, 5.05, 4.58, 2.52, and 2.27 per cent of the total firewood production of the region respectively. The lowest production is reported from Changbhakhar Division. It is only 0.34 per cent of the region's production or 864 m$^3$ only.

Value (Fig. 27)

The region collects Rs.3,361,089 as the value of firewood annually (App. X). It is 3.70 per cent of the total income from the forests in the region (App. XIV), and the per km$^2$ return is Rs.54.16. The maximum collection of firewood comes from Kanker Division, where the collection is Rs.1,678,901 annually or Rs.443.63 per km$^2$. This Division alone contributes about 50 per cent of the revenue collected from firewood in the region (App. XIII). Better accessibility to the Raipur and Durg markets is one of the causes of this high collection (Agarwal, 1968, 148).

The North Raipur Division collects Rs.171.25 per km$^2$ and shares 14.04 per cent of the region's collection from firewood.
Collection is high in Bilaspur, South Raipur, South Surguja, Raigarh, North Durg, and North Bilaspur Divisions, where the collection is 9.17, 8.22, 5.30, 4.95, 3.38, 1.29, and 1.05 per cent of the region's collection from firewood respectively. In these Divisions, collection per km$^2$ is Rs. 148.19, 122.77, 77.47, 47.01, 32.09, 15.66, and 6.04 respectively. The lowest collection is recorded at Changbhakhar Division, where collection from firewood is worth Rs. 1,586 only and per km$^2$ collection comes to only Re. 0.72.

**Relative Importance**

The rank of firewood among the sources of income varies from one forest Division to another (App. XIV). It comes to third in eight Divisions, fourth in one, fifth in three, sixth in four, and one each in eighth and ninth (Figs. 29-33).

**Production Trend**

It is a fact in the forestry of the region that no trend of production is a trend of production (App. VIII). Before the First Five Year Plan, the production of firewood was 119 thousand m$^3$, which increased to 142.58 thousand m$^3$ during 1966-67 — 68-69, i.e. an increase of only 19.16 per cent. The highest increase was recorded in the Second Five Year Plan period, which was 171.37 per cent of the production, prior to the First Five Year Plan. In the Third Plan period the decrease was about 9 per cent which increased to about 52 per cent in the period 1966-67 — 68-69. This was a period of pre-nationalisation of forest produce, which caused a remarkable decrease, due to the irregularities in production.