

CHAPTER – 1

AREA UNDER THE WORKING PLAN

NAME AND SITUATION

The present working plan deals with the forests of Hazaribagh East Forest Division which is largely situated in the eastern parts of the Hazaribagh district and the two smaller portions viz Saria-Bagodar and Chatrochatti forests belong to the Giridih and Bokaro districts respectively.

The total geographical area of the concerned civil administrative blocks is 334453.39 hec(334453.39 sq. kms.) of which the total forest area of the Hazaribagh East Division is 90921.491 ha (909.2149 sq. kms) of which 2380.21 Ha (23.8021 sq. km.) is leased to different organization like C.C.L., B.S.F., TISCO Government agriculture forms etc. Thus net area under forest department at present is 88541.28 Ha (885.4128 sq. kms). The percentage forest area under this Division is 27.18% of the total geographical area.

Almost 1/4th (i.e. 365.98 sq. kms) of the Hazaribagh East Division has been transferred to the newly created Bokaro Forest Division by the Government of Bihar order no. 170/97-4376 V.P. dated 31.12.1997 which falls under the Bokaro revenue district.

Legally there are three types of forest in the division

(a) Reserved Forest (Free of rights) -	2524.18 Ha
(b) Ex.Reserve Forest (Free of rights) -	13229.86 Ha
(c) Protected Forest (Right burdened) -	75167.45 Ha
Total -	90921.49 Ha.

2. HISTORICAL BACKGROUND OF HAZARIBAGH EAST DIVISION

Before 1943 Forest in Hazaribagh District were looked after by Private Estate Forest Officer. Hazaribagh Division was created on 1.1.1943 for managing the

forest in the District of Hazaribagh & Ranchi. Then Ranchi Division was created in 1945. Comprising all the forests in Ranchi District. Consequently, upon the enforcement of Bihar Private forest Act, 1947 the management of all the private protected forest of Hazaribagh, Gaya & Patna district came under the control of Hazaribagh Division.

The work load of the Division suddenly increased manifold from the normal work load of Division. The Division was gradually split into several smaller Divisions. Finally the Hazaribagh East Division & Hazaribagh West Division were created in March 1961. Smaller divisions were created vide various notification nos. & date as below-

- The Hazaribagh Division was created on 1.11.1943 for managing the forest in Hazaribagh & Ranchi district vide notification no. 4754-VIF-40-43-R dt. 14.10.1942.
- The Ranchi Division comprising all the forest of Ranchi District started functioning from 1.4.1946 vide notification no. 9761R/VIF-106 dt. 19.12.1945.
- Chatra & Gaya Division were created in June 1952 vide notification no. C/PF-7011/52-222 dt. 23.05.1952.
- Koderma Division was created in 1957 vide notification no. C/F-7014/56-2248R dt. 6.10.1956.
- Finally Hazaribagh East & West Divisions were constituted as independent divisions during March 1961 vide notification no. C/F-1(A) 013/61-608R dt. 10.04.1961.
- Major area of Hazaribagh East Division lies under Hazaribagh Revenue District while part of the are lies under Bokaro & Giridih Revenue District.
- 365.98 sq. kms. Of Hazaribagh East Division has been transferred to newly created Bokaro Forest Division by the Govt. of Bihar No. Yojana Budget-170-/97 V.P. dt 31.12.1977 which falls under present Bokaro Revenue District.

AGRO CLIMATIC ZONE

The Hazaribagh East Division falls in the Central and North Eastern Plateau Zone of the Jharkhand State. This zone comprises of the districts of Hazaribagh, Giridih, Santhal Parganas, Dhanbad, Bokaro and North Eastern portion of Ranchi.

This zone is characterized by humid to sub humid tropical monsoon type of climate. The average annual rainfall is 1324 mm. Monsoon breaks in the first week of June and continue till the middle of October. Nearly 82.5% per cent of the total rainfall occurs during the period. Winter rains (December to February) are very helpful to rabi crops. Summer rains contribute to about 88m.

The soil of this zone is very hard. The physiography and soils of the Chhotanagpur plateau are mainly lithologically controlled. The Chhotanagpur plateau slopes both towards north and south.

This zone has a two step landscape extending from Dumka to Ranchi in Hazaribagh after which there is a sudden rise through Chuttupalu valley extending in to the upland of Ranchi. The average elevation of these two stages is between 275-458 metre and 550-670 metres above mean sea level. These two areas are nearly level landscapes broken by valleys and hillocks or hill ranges rising out of the plains.

The soil association groups of this zone are:-

- (a) Red yellow light grey catenary soil.
- (b) Pale yellow, yellow-pinkish deep catenary soils of coal belt.
- (c) Hill and fore soils of steep slope and highly dissected regions.
- (d) Soil in general is gravelly sandy loam to loam.

3 GEOGRAPHICAL LOCATION

Forests of the Division lie between 23°37' N and 24°15' N latitude and 85°20' E to 86°4' East longitude falling in the North Chhotanagpur Commissionerary of Jharkhand State.

4. CONFIGURATION

Forest of this Division lie mainly on the eastern parts of the Hazaribagh plateau and its undulating slopes. The plateau is permeated by several rivers like the Konar, the Bokaro, the Damodar, the Siwane, the Jamnai, the Ghaghari and the tributary nalas. The topography of the plateau is plain to undulating. The catchments river basin of

the Bokaro is bounded on the north of the hilly slopes to the Mandu Range. Conspicuous among hills are peaks of the north Jhumra Pahar (av. Altitude 950 m.), Bhitia peak (790m), Chandwar Pahar (843m), Babhanway Pahar (770m), Kanhari Pahar (710m), Potmo Pahar (697m), Bali Pahar (716m) etc. A sizeable portion of the division has sloppy plains to common undulating terrain.

5. EXTENT/JURISDICTION

The jurisdiction of Hazaribagh East Division is spread over part of the Hazaribagh, Giridih, and Bokaro Districts. The major forest area of Hazaribagh East Territorial Division exists in the revenue blocks of Hazaribagh Sadar, Churchu, Mandu, Bishnugarh, Bagodar (Giridih) and Gomia (Bokaro) covering 90921.49 ha or 909.2149 sq. kms area.

Revenue District wise forest area breakup of Hazaribagh (E) Division

Sl. No.	Name of Revenue District	Range	Total forest in acre	Total forest in hectare
1	Hazaribagh	Mandu	67555.83	27339.57
		Daru	45194.13	18289.81
		Bagodar (Bishnugarh Block)	44822.72	18139.51
2	Giridih	Bagodar (Bagodar Block)	44502.54	18009.93
3	Bokaro	Gomia (Chatrochati)	22591.79	9142.67
	Total :-		224667.01	90921.49

P.S. Total Forest Area included the transferred forest area to the C.C.L. and other mining activities, the B.S.F., Meru, Demotand Agriculture Form, submerged area of Konar Dam etc.

6. DEMARCATIION AND STATE OF BOUNDARIES

The ex-reserves are demarcated by a 6 meter (20ft.) wide boundary line with cairns of stone or earthen pillars. Placed at intervals all along the line. The boundary line and pillar do not appear to have been regularly maintained. Most of the boundary pillars exist in broken and dilapidate state while quite a number of them are unnoticeable.

The state of boundary line of erstwhile P.P.F. or the Zamindary forest is not at all happy. Though at vulnerable places the old boundary pillars have been substituted by concrete pillars but their number is few.

All subsequent release or lease of land from forest demarcation has been excluded on the ground and on the map. The table of boundary pillars is given in the Annexure.

7. DISTRIBUTION OF AREA INTO RANGES, BEAT, SUB-BEATS

Given in the table below:-

TABULAR STATEMENT OF RANGE, BEAT & SUB-BEAT OF HAZARIBAGH EAST

DIVISION

I. MANDU

Range	Mandu	Charhi	Kuju
Beats	1. Honehemorha	1.Chichi	1. Religara
Sub	2. Khapia	2. Charhi	2. Tongi
beats	3. Belsagra	3.Bansadih	3. Hesalong
	4. Mandu (W)	4.Pindra	4. Datms
	5. Mandu (E)	5. Lasodih	5. Kuju(w)
		6. Basantpur	6. Kuju(E)
		7. Parej	7. Argada
		8. Laiyo	8. Bongabar
			9. Chainpur
			10. Karma

II. DARU

Kanhari (E)	Kanhari (W)	Ango
1. Kesura	1. Meru	1. Beram
2. Morangi	2. Sarauni	2. Choye
3. Pauta	3. Banahapa	3. Ango
4. Jadishpur	4. Jonhea	4. Potmo
5. Gurhet	5. Bhandarbar	5. Jamdiha
6. Guruwa		6. Edla
7. Kanhari		7. Digwar
		8. Mangarpata

III. Bagodar

Tatijhariya	Bishungarh	Bagodar	Sariya
1. Chitramo	1. Bishungarh	1. Dhargulli	1. Mandramo
2. Bhelwara	2. Golgo	2. Atkadih	2. Bagodih
3. Chelwara	3. Banaso	3. Arwara	3. Khaskari
4. Tatijharia	4. Chano	4. Bagodar	4. Chaudhribandh
5. Panimako	5. Karki	5. Achlijamo	5. Mokamo
6. Dumar	6. Narki	6. Aurra	6. Chichaki
	7. Arjari	7. Chautha	7. Dandlo
		8. Marmo	8. Keswari
		9. Bonkhara	9. Parsia

IV. Gomia

Chatrochatti
1. Hurlong
2. Chatrochatti
3. Karikhurd
4. Jarkunda
5. Tiscopi
6. Jhurma Pahar (North)
7. Barka Murpa
8. Chute

Total No. of Ranges. 4

Total No. of Beats – 11

Total no. of sub beats – 82

8. MAPS

The basic record showing the demarcation of Forest is on the cadastral maps on 16"=1 mile scale. The master copy of the maps of each village showing up-to-date corrected boundary line is kept in the Divisional Office.

The map for field work is on 6"=1 mile topographical maps prepared by Damodar Valley Corporation for their catchments area. For such areas for which 6"=1 mile topographical maps are not available, enlargements on 4"=1 mile (1:50,000) topographical maps have been prepared and used in the coppice coupe felling series of the division.

The forest area of the division is covered by following 1:50,000 top sheets:- 72H/8, 72H/12, 72H/16, 72E/4, 72E/5, 72E/6, 72E/9, 73E/10 and 73E/13 = Total 9 nos. of sheets.

9. LEGAL POSITION

Ex-Ramgarh reserves – The former Ramgarh reserves were notified as Reserved Forest under section-20 of Indian Forest Act on application by the Court of Wards on behalf of the proprietor of Ramgarh Estate under section 38 of the Act.

The agreement dated the 18th September, 1941 was determined for non-fulfillment of the terms by the proprietor. Subsequently forests were denotified as reserved forests under section 27 of the Act vide notification no. 11967-VIF-293/47, dated the 18th December, 1947; no. 12221-VIF293/47=R, dated 28th December, 1947 and no. 12222-VIF-193/47-R, dated the 28th December 1947. The forests were simultaneously notified under section 14 of the Bihar Private Protected Forests Act 1946 and were provisionally declared as Private Protected Forests under section 29(1) of the B.P.F. Act in Government Notification No. 11969-VIF-293/47-R dated the 18th December 1947 and no. 12224-VIF-293/47-R, dated the 28th December 1947.

The forests which were shown as unnotified at the time of last revision of plan (para-37 of Mishra's Plan) had actually been already notified as P.F. vide notification No. 6 R dated the 3rd January 1957.

The forests of the following villages were notified under section 4 of the I.F. Act on application having been made under section 38 of the Act. The final notification under section 20 is yet to issue.

Range	Name of village	Thana	Thana no.	Section of IF Act	Notification
Hazaribagh	Meru	Hazaribagh	216	U/S38 &4	No.1322-VIF-1/46R dt.22.1.46
	Gondwar	Mandu	69	U/S38&4	No. 6120-VIF-5/44 dt.13.12.44
Bagodar	Nagarkeshwari	Bagodar	28	U/S38&4	No. 6120-VIF-5/44 dt, 13.12.44
		Bagodar	30	U/S38&4	No. 6120-VIF-5/44 dt, 13.12.44

The final notification under section 20 of the Act after completion of obligatory formalities is yet is issue.

The protected forests in the following villages have been notified under section 20 of the I.F. Act constituting them into Reserve Forest.

Range	Name of village	Thana	Thana no.	Section of IF Act	Notification
Hazaribagh	Jabra	Hazaribagh	154	U/S.20	C/PF-10175/52 5700R dated 20.12.52
	Kora	Hazaribagh	156	U/S.20	C/PF-10175/52 5700R dated 20.12.52
	Sendur	Hazaribagh	160	U/S.4	No. 2389-VIF-117R dt. 8.6.1959
	Jagdishpur	Hazaribagh	168	U/S.4	No. 2389-VIF-117R dt. 8.6.1959
	Bhelwara	Bagodar	185	U/S.20	No. 1474-VIF-72/45 R dt. 23.3.1945, 1476 dt. 23.3.1945

Banaso	Bagodar	242	-	Not available
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10. FOREST SETTLEMENT

Forest settlement proceedings have been completed in respect of all the notified P.Fs as required section 29 (II) of the I.F. Act and all records relating to the proceedings along with a copy of the demarcation map showing the exact extent of forests have been deposited in the record room of the Collectorate. List and extent of rights admitted over a particular forest is, however, not available in the Divisional Office. This is an important record which has to be consulted very often when a dispute arises. It is advisable to obtain copy of the forest settlement order in respect of each forest and maintain the same as permanent record in the Divisional Officer.

CHAPTER – II

LOCALITY FACTORS

1. CLIMATE

The area has typical three district seasons, the summer, the rainy and the winter seasons of the monsoon type of climate. Being situated just beyond the Tropic of Cancer the winter is quite distinct and prominent. Due to comparatively higher altitude on the Hazaribagh plateau the extreme of temperature during summer is ameliorated. However, places at lower altitude record quite high temperature during summer. This sometimes, adversely affects the plantations. Hot westerly wind, the Loo is experienced all over the tract. Deaths due to heat stroke is almost feature in the low lying colliery belts.

Monsoon generally breaks by middle of June. Pre-monsoon showers during Late May or early June is a common feature. The rainy season ends with the Hathia rain in early October. There is a small winter rain during January and February.

The winter is generally pleasant at Hazaribagh except for a short period when the night temperature almost touches the freezing point. Though frost is not so common, certain low lying pockets on the plateau near depressions and along the nala become frosty during the cold wave.

The climatological data obtained from the Director, Meteorological Department, Hazaribagh are as follows:-

TABULAR STATEMENT OF MONTHLY NORMALS OF RAINFALL (in mm)
(Average Monthly Rainfall of last 10 years)

	Hazaribagh	Churchu	Mandu	Bishnugarh	Ramgarh	Barkatha
1	2	3	4	5	6	7
January	24.07	18.66	13.90	19.73	18.17	16.41
February	27.42	11.20	9.19	14.79	26.88	11.20
March	21.15	6.10	13.31	11.81	14.19	7.65
April	16.83	22.10	15.34	18.84	17.33	24.84

May	46.62	100.30				
June	187.43	161.58	177.94	180.99	191.28	162.25
July	314.67	243.10	318.89	335.27	327.21	233.44
August	341.13	286.04	264.91	284.23	310.59	270.01
September	270.74	241.01	247.88	243.72	229.65	211.70
October	78.12	57.30	70.14	73.53	76.84	82.63
November	11.88	4.00	5.87	4.64	7.33	3.07
December	5.71	3.68	5.42	7.37	10.14	8.37
Total :-	1365.77	1090.47	1178.26	1231.26		1066.41

TABULAR STATEMENT OF MONTHLY OF RAINY-DAYS
(Average Monthly Rainy-Days of Last 10 years)

	Hazaribagh	Churchu	Mandu	Bishnugarh	Ramgarh	Barkatha
1	2	3	4	5	6	7
January	1.4	1.0	1.1	1.0	1.4	1.6
February	1.3	0.9	0.6	0.5	1.3	2.2
March	1.3	0.5	0.4	1.1	0.8	1.9
April	1.0	0.8	0.8	1.1	2.1	0.7
May	3.5	1.8	2.3	3.4	3.6	2.1
June	11.0	11.0	9.5	9.5	9.3	10.5
July	16.5	15.6	15.2	15.0	15.8	15.3
August	18.0	17.2	16.3	14.8	16.8	16.3
September	13.2	14.1	11.6	13.6	11.7	13.0
October	5.0	4.7	2.2	2.7	2.2	3.3
November	0.7	0.5	0.6	0.5	0.4	0.6
December	1.2	0.3	0.9	0.7	0.7	0.6
Total :-						

TEMPERATURE & HUMIDITY

Year – 1996

Hazaribagh

Months	Rainfall (mm)	Minimum Temp.	Maximum temp.	Solar Radiation (hr)	Max humidity (%)	Mean Humidity (%)
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1	2	3	4	5	6	7
January	26.8	8.6	21.6	7.4	89.2	49.4
February	40.4	10.0	25.5	9.3	85.8	37.3
March	6.3	15.7	31.4	9.5	71.0	36.6
April	3.1	19.1	35.5	8.9	59.5	24.5
May	11.1	23.5	38.9	10.1	57.9	18.5
June	253.8	23.2	32.3	7.0	85.6	56.2
July	132.8	23.4	30.7	5.0	90.3	68.0
August	355.8	22.9	28.8	3.0	93.4	78.1
September	183.9	22.3	29.7	6.0	93.4	66.5
October	36.5	16.7	28.4	8.6	87.2	50.3
November	0.0	10.4	23.3	10.0	83.2	37.5
December	0.0	5.6	22.2	9.5	79.9	32.0

Year – 1997

Hazaribagh

Months	Rainfall (mm)	Minimum Temp.	Maximum temp.	Solar Radiation (hr)	Max humidity (%)	Mean Humidity (%)
1	2	3	4	5	6	7
January	15.3	5.9	21.6	8.2	85.3	36.8
February	2.2	8.6	25.3	9.7	74.5	20.3
March	0.0	14.2	31.5	9.5	64.8	20.1
April	18.8	17.8	34.1	9.2	71.7	32.8
May	47.0	22.0	37.5	10.5	62.1	32.3
June	211.0	23.5	35.1	8.0	77.4	39.4
July	369.8	23.2	29.0	3.2	93.2	80.0
August	340.8	22.3	29.2	4.2	91.16	71.65
September	391.0	27.3	29.2	5.2	92.80	66.77
October	59.8	19.6	27.3	7.9	92.84	58.97
November	25.2	13.4	25.2	8.5	91.97	55.50
December	20.4	9.4	20.1	6.5	91.26	54.10

Year – 1998

Hazaribagh

Months	Rainfall (mm)	Minimum Temp.	Maximum temp.	Solar Radiation (hr)	Max humidity (%)	Mean Humidity (%)
1	2	3	4	5	6	7
January	40.2	7.4	20.1	7.1	89.87	56.88
February	24.0	10.5	23.9	8.4	83.32	43.21
March	34.8	13.5	27.4	9.3	78.35	35.45
April	30.4	19.4	34.9	9.4	79.80	32.80
May	107.8	23.1	36.8	10.1	75.42	35.19
June	163.8	25.6	36.2	7.1	73.97	40.30
July	287.9	23.8	29.7	3.1	88.93	71.30
August	254.5	23.7	30.0	3.9	90.67	72.60
September	185.6	22.8	29.4	5.8	91.53	72.53
October	88.9	20.4	28.5	6.8	89.40	70.66
November	9.8	14.4	33.1	5.5	86.03	73.57
December	0.0	7.1	23.3	9.0	83.03	39.03

Year – 1999

Hazaribagh

Months	Rainfall (mm)	Minimum Temp.	Maximum temp.	Solar Radiation (hr)	Max humidity (%)	Mean Humidity (%)
1	2	3	4	5	6	7
January	0.0	5.9	21.8	9.2	77.5	28.4
February	0.0	11.1	26.9	9.7	72.8	43.0
March	0.0	14.2	32.4	10.2	63.3	33.6
April	1.8	19.9	38.5	10.7	51.2	11.6
May	95.7	21.9	36.6	7.7	70.3	33.3
June	289.0	23.3	32.8	5.6	82.1	58.4
July	303.2	23.0	29.6	3.5	89.3	74.8
August	405.4	22.6	28.5	3.5	90.9	73.8
September	188.9	21.8	27.7	2.9	91.6	72.7
October	74.2	18.7	27.8	6.2	90.2	61.6
November	0.0	12.0	25.9	9.7	82.2	46.3

December	0.0	7.3	23.9	8.5	86.4	50.6
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Year – 2000

Hazaribagh

Months	Rainfall (mm)	Minimum Temp.	Maximum temp.	Solar Radiation (hr)	Max humidity (%)	Mean Humidity (%)
1	2	3	4	5	6	7
January	2.4	6.4	23.8	9.8	79.6	73.8
February	23.0	9.4	23.7	6.8	86.0	68.9
March	23.0	17.0	30.4	9.8	64.2	25.8
April	0.0	17.9	37.1	9.7	49.0	17.8
May	49.6	18.1	36.6	8.4	66.7	40.5
June	173.6	23.6	31.3	4.9	84.1	63.6
July	258.8	23.1	29.2	3.3	90.1	73.2
August	137.0	22.9	29.6	5.5	85.7	75.7
September	372.6	21.6	28.2	4.5	92.0	76.7
October	15.8	18.3	29.5	9.0	87.8	64.2
November	0.0	11.9	27.3	9.2	84.6	54.5
December	0.0	5.6	23.0	8.8	83.2	61.68

3. GEOLOGY, ROCKS & SOIL

The geology of the area lying within this Division consists of two systems:- (i) the Archeans and (ii) the Condwanas. The general formation is archean but in the Valleys of the Damodar and its tributaries extensive areas of Gondwana formation, which is one of the oldest of the sedimentary rocks are found.

THE ACHEANS

These consist of the metamorphic and igneous rocks like schist, gneisses and granites. These rocks are intersected by acid pegmatite veins. The metamorphic rocks consist of several types of schist like Para & ortho-schist, mica-schist, phylately and Slate hornblend-schist, clac-schist and gronerite schist. The intrusion rocks of the granite family have undergone considerable reconstruction in the schist both texturally

and mineralogically and have given rise to several hybrid types of gneisses. In most cases the intrusive granite have been gneissose (including the so called dome-gneiss) or schistose. It varies from biotite granite to hornblende-granite and is fine to coarse grained, coarse porphyritic types are also found.

The dome gneiss is gneissose biotite-alkali granite and gives rise to dome shaped hillocks due to spheroid weathering. The rock is some times porphyritic and consists of quartz and microcline with smaller quantities of oligoclase, biotite, hornblende and accessory sphene, apatite and zircon. The quartzite due to their extreme resistance to weathering stands out as bold ridges and cliffs. Veins of pegmatites are associated with granite and where they have penetrated into mica-schists they contain, at places, books of workable mica. The pegmatite consists of crystalline or amorphous Quartz, feldspar and other interesting minerals such as patite tourmaline, beryl, garnet, fluorite, cassiterite, and epidote.

THE GONDWANAS

The rocks occur in the southern part of the Division in Mandu and Gomia Ranges in a basin like structures and are distributed in an east west belt parallel to the general structural trend of the Archeans.

The interbedding of coal seams with sand stone or shale is a common feature. Generally sand stone is found to overlie coal with a layer of pebbles immediately above it, while shale underlies it. The disposition of beds is generally horizontal or a little inclined. Gondwana coal basins are generally bounded by major faults.

SOIL

The soil derived from the Archean rocks is generally sandy loam. The general name given to it is 'RED SOIL'. The soil is generally acidic. Available potash is rich but phosphate is low. The soil derived from quartzite is poor and shallow.

The soil overlying the shale of Gondwana system tends to be clayey & heavy while that overlying the sand stone is sandy loam and light.

The degree of soil erosion varies from sheet erosion to formation of deep gullies. Due to frequent fire and heavy grazing the soil floor is almost bare of any

vegetative cover or cover by dead fallen leaves. Due to this soil run off is fairly high in the first few rains of the summer monsoon.

Water level generally varies from 8 to 10 M. Even during peak summer the water level does not reduce lower than 13 meters except in some localities.

RIVERS

The main rivers of the Division are the Konar and the Bokaro. The much convoluted of these two rivers and their several tributaries traverse the entire area of the Division except its South-Western parts whose nalas drain into the Damodar river boundary the Southern boundary the Southern boundary of the Division. Both the Konar and the Bokaro rivers ultimately drain into the perennial Damodar near Bokaro Thermal Power Station.

Part of the upper eastern boundary of the Division is bordered by the Barakar River. The two import and tributaries Khero Nadi and Barsoti Nadi permeate the north-eastern parts (Bagodar-Saria) of the Division.

The Konar has its longest winding course in the Division and the longest list of tributary nalas and nadis like Chargi, Ghaghari (Daru), Jargo, Argawa Parwa (Tati Jharia), Chirua nadi, Boro nadi and Kekiya nala of Chotrachatti Range.

There is one big water reservoir namely Konar Dam. The general drainage is from West to East as is indicated by the course of the main rivers. The entire area of the Division lies in the catchments of the Damodar river.

WATER SUPPLY

The Damodar is the main river of the Division bonding partially the southern boundary of its forests. The principal tributaries of the Damodar flowing through the tract are the Bokaro and the Konar. The forest of Bagodar Range drain into the Barakar bordering partially the eastern boundary of the Division. The tributaries of the Barakar are the Jamunia river, the Khero and the Barsoti nadi.

The Damodar, the Konar and the Bokaro are all perennial throughout their course in the Division. Besides some of their tributaries are also perennial for short

distance before they join the main rivers, The word perennial means for the purpose of supply of drinking water only.

A major water reservoir on the Konar near Chatrochati (Konar Dam) has been constructed in the Division by the Damodar Valley Corporation (D.V.C.) for the twin purpose of power and irrigation in early 1960s. The reservoir has rendered the river flowing and has improved one river supply in the down stream.

The water of the Damodar and the Bokaro has become polluted due to illegal coal mining along river beds as well as coal mining operations and coal based industries of the C.C.L. and others.

RIGHTS CONSESSIONS AND PRIVILEGES

The reserve forest and the ex Ramgarh reserves are completely free of any right other forests (P.F.) are all heavily burdened with right. The rights generally consist of free supply of timber and firewood for bonafide domestic consumption and right to graze cattle in the forest. The rights also entitle people to collect flowers, and roots for their own consumption.

To meet the requirement of timber and firewood special provisions have been made to supply these items from annual coupes. Depending upon the number of household in a particular village, the area of rightholder's coupe has been determined for each-right burdened Felling Series of Coppice working Circle. The rightholder's coupes are laid out annually and handed over to the local panchayat for distribution of produce among the rightholder. Due to excessive deterioration of the Forest, many of the rightholders coupes do not contain any thing except only rooted stock of Sal. The result is that the rightholders do not work the coupe. Due to this attitude of the villagers many of the rightholders coupes are not being laid out. Since the villagers depend entirely upon the neighboring forest for their requirement of timber and firewood, they try to obtain the same from wherever it is available this result in large fellings all over the forests. So far grazing of cattle is concerned, the whole forest including even the freshly coppice coupes is grazed and there is any distinction between right holders and non-right holders.

GRAZING AND FODDER

Cattle population in the Division is pretty high including sheep, goats and pigs. The quality of milk cattle is poor and hence the milk production too. Dairy thus does not play any significant role in the rural economy.

Practice of stall feeding of cattle in village is not common except a few dairy establishments with improved breeds. Cattle of almost all 570 villages of the Division roam in forest for their feed round the year save rainy season when the fodder leaves are collected from jungles and brought to cattle stead. The Division is rich in fodder species like.

- | | |
|-------------------------------|------------|
| 1. Kachnar-Bauhinia Variegata | 11. Kusum |
| 2. Laba | 12. Jamun |
| 3. Pakhar | 13. Asan |
| 4. Bar | 14. Arjun |
| 5. Peepal | 15. Khair |
| 6. Doka | 16. Pandan |
| 7. Grawia | 17. Gaj |
| 8. Mahua | 18. Imli |
| 9. Bakair | 19. Ber |
| 10. Am | 20. Bans |
| | 21. Pula |

LIST OF FODDER REQUIREMENT/DAY

Class of Stock	General Fodder in Kg.	Dry. Fodder in Kg.
1. Miling Cows	30-35	3-4
2. Milking buffaloes	40-45	3-4
3. Dry cow & buffaloes	15-20	4-8
4. Pregnant cow & buffaloes	40-50	1-2
5. Growing calves	15-20	1-3
6. Buffaloes Corking	30-40	3-4

In plantation of recent year in the Division fodder species have been given due importance and the following species planted as fodder species.

1. Shisham
2. Gamhar
3. Subabool
4. Sahjan
5. Kathal
6. Kachnar
7. Imli
8. Jamun
9. Mahua
10. Khair
11. Bel
12. Ber
13. Semal
14. Bans

There are common fodders in the Division.

1. Anjan
2. Cenchrus
3. Dinamath
4. Stylo
5. Bankanlthi

ENCROACHMENTS AND ILLICIT CULTIVATION

People in the Division have mostly encroached the forest land for land for habitation and cultivation purposes. Forest areas near the density populated townships particularly Hazaribagh have higher incidences of encroachments for both the above said reasons. However the population density is pretty high in the entire Division except some remote interiors of Chatrochatti, Tati-Jharia, Bishungarh and Ango Beasts of the Division because the two major grand cord Railways, the two National Highways No.2 and No. 33 and three important State Highways pass through the Division apart from the vast coal mining area of approx 1686.0 Ha of national importance.

An updated list of August 2002 related to encroachments and illicit cultivation in the Division is attached in Annexure.

INJURIES TO WHICH CROP IS LIABLE

A. GRAZING

This is another menace related to man which causes heavy damage to the forests. This impedes regeneration due to trampling and grazing of young plants. Besides, the forest soil is rendered compact due to heavy grazing. Compact soil has low water absorption capacity and is unfavourable for regeneration.

Injury due to natural causes like frost, drought and wind is rather insignificant. Sometimes the plantations of tender species are affected by insects, weeds; climbers' also similar injuries caused by the fungus are especially insignificant. The injury caused is quite appreciable the one causing the heart rot to is affected by this in poorer locality almost over stem fungus.

B. FIRE : Fire is the major destroyer of forest crop which is usually found over the dry and rocky areas of the forest along with other various tree species like Salai, Semal and Galgal. During summer when the climate is dry enough, the incidents of catching fire becomes common because of the human mistakes of throwing burning wicks while smoking.

The chief cause of fire damage is the Mahua flower collection during late spring (March-April), which is a very common associate of forests. Fire due to loaded trucks spewing sparks through their exhausts cause fire in forest on both sides of NH-33 (Ranchi-Patna Road) especially in Mandu Range C.C.L. mines have led to heavy population leading to more man made fire hazards to the forests.

C. FROST : Forest crop found in low lying areas of forest is tender and susceptible to injuries in cases of much moist nalas. The young crop becomes adversely affected and in most cases turn up into unhealthy stems. Frost only in extremely moist locals retards growth of sapling into unhealthy stems only.

D. TERMITES : From ground lying to big sized termitaria which are most uncommon in the dry areas of bamboo mixed forest. The clumps become termite stricken and die because of the coleopteran insects.

E. BIOTIC FACTOR: Among major injuries caused to the forest crop the grazing of, seedling and young crop is no less greater a problem. Herds of cattle roam freely almost round the year in the forest to nibble, graze, browse and trample the ground greenery of the forests. It plays a great role in deteriorating the overall health of the forest vegetation and the soil due to its compaction by hooves.

F. HUMAN FACTOR : Illicit felling for fuel wood and timber has caused great damage to the forest situated near the villages.

G. LANTANA : Last but not the least important among the injuries causing factor to bamboo is the weedy species Lantana camara of family Verbenaceae, commonly known as the 'Putus Jhadi.' It spreads fast and covers up most of the forest floor in a shortest possible time. The encroaching capacity of Lantana is so striking that it almost completely chokes any furthering of bamboo clumps by extreme diminution of its space availability.

