



सत्यमेव जयते

GOVERNMENT OF MAHARASHTRA

**WORKING PLAN
FOR
YAVATMAL FOREST DIVISION
YAVATMAL CIRCLE**

PERIOD : 2023-2024 to 2032-33

VOLUME - II

**BY
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PREFACE

॥ अंत अस्ति प्रारंभ ॥

End is the New Beginning

I am delighted to present the Yavatmal Working Plan, a comprehensive document outlining the strategies and measures for the sustainable management of Yavatmal Forest Division. This Plan replaces the previous working plan of Shri.G.Rama Krishna Rao, IFS covering the period from 2012-13 to 2021-22. The PWPR for this Plan was prepared by Shri.V.T.Ghule, IFS, Conservator of Forests (T), Yavatmal Circle, and was approved by the State Level Committee on October 10, 2022. On the basis of approved PWPR, the Draft Working Plan was prepared according to the 'National Working Plan code 2014' and presented before standing consultative committee on Dt. 13.3.2024 and for approved by committee as per letter No.Desk-14/WP/ACF/165/2023-24/Dt.21.3.2024

The development of this plan would not have been possible without the invaluable guidance and assistance of numerous individuals who have contributed their expertise, knowledge, and support throughout its creation.

First and foremost, I am eternally grateful to Shri.Uttam Kumar Sharma, IFS, (MP:1999) for instilling the foundations of working plan and forest management during the early stages of my career.

I extend my heartfelt gratitude to Shri.B.S. Hooda, IFS PCCF (P&M), for his unwavering guidance and support. His profound understanding of forest management principles has been instrumental in shaping the vision and objectives of this working plan. I am also thankful to Smt.A. Sreelakshmi, IFS, Chief Conservator of Forests (Working Plan-East), Nagpur for her valuable inputs provided during the process.

I express my gratitude to Shri. V.T. Ghule, IFS, Conservator of Forests (T), Yavatmal, for his guidance, and I am thankful to Shri. U. Umesh Verma, IFS, for his inputs on forest accounting. I would also like to sincerely appreciate the officials and

staff of the Yavatmal Forest Division, who have tirelessly worked to gather data and provide essential insights necessary for the preparation of this plan.

I commend the SOFR Amaravati team for their efforts in conducting the tree enumeration exercise, and I am thankful to the Chief Statistician, Nagpur, for providing the analysis of plot enumeration data. Additionally, I would like to express my gratitude to the GIS Cell, Nagpur, for providing the necessary GIS data.

I acknowledge the contributions of the members of the Working Plan office, namely Shri. S.B. Giri, ACF, Shri. S.B. Chakre, RFO, Smt. P.S. Gulhane, RFO, Shri. N. Satai, Ranger Surveyor and Shri. A.G. Chavhan, Surveyor, for dedicating their time, expertise, and efforts to ensure the completeness of this plan. I am particularly thankful to Shri. Prasanth Korale, ACF, for his insights and unwavering support during the preparation of this plan.

I would like to express my appreciation to the forest guards in the Working Plan office, including Smt. S.B. Bharsakale, Smt. P.V. Pendor, Smt. P.V. Rathod, Smt. Y.R. Wankhade, and Shri T.R. Patil, for their efforts in assisting the officers and surveyors in the preparation of this plan.

I am grateful to the support staff of my office, including Shri B.L. Khadse, Stenographer, Smt. S.N. Ghukse, Accountant, Shri S.L. Khobragade, Clerk, Smt. M.S. Binnod, Clerk, Shri K.B. Sanap, Driver, and Smt. S.R. Pardhi, Peon, for their cooperation during the preparation of this plan. I also like to appreciate the efforts of Data Entry Operators Shri. Mohan P. Gulhane and Shri. Amol S. Belsare for their timely cooperation.

I would also like to acknowledge the contributions of the scientific and research community, who shared their expertise and provided crucial insights throughout the development of this working plan. Special thanks to Dr. Praveen Joshi, Department of Zoology, Amolakchand Mahavidyalaya, Yavatmal, for his valuable insights on avifauna in Yavatmal.

I am deeply grateful to the environmental organizations and non-governmental organizations (NGOs) who have collaborated with us in various capacities. Their advocacy, support and capacity-building initiatives have significantly strengthened our efforts towards sustainable forest management and conservation.

I am especially thankful to Shri. Shyam Joshi, Honorary Wildlife Warden, Yavatmal for his insights on wildlife conservation.

Furthermore, I extend my thanks to the local communities residing in and around the Yavatmal Forest Division. Their invaluable knowledge of the region, traditional practices and sustainable resource management techniques have greatly contributed to the formulation of this working plan. Their active participation and cooperation are vital for the successful implementation of the proposed strategies.

In this Working Plan, an effort has been undertaken to incorporate QR (Quick Response) codes whenever there is a mention of an appendix in Volume-II. This is aimed at enhancing the ease of using the Plan.

I sincerely hope that this working plan serves as a blueprint for effective management, conservation, and sustainable utilization of the forest resources in the Yavatmal Division. May our shared commitment to the cause of preserving our natural heritage inspire us to work together towards a greener, healthier, and more sustainable future.

Place: Yavatmal
Date :August 14, 2023


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Working Plan, Yavatmal

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WORKING PLAN OF YAVATMAL FOREST DIVISION

EXECUTIVE SUMMARY

1. THE TRACT DEALT WITH

Yavatmal Forest Division is one of the four forest divisions in Yavatmal Circle. It is located in Yavatmal District of Maharashtra. Area of the division lies in Yavatmal, Kalamb, Arni, Ner, Darwha and Babhulgaon talukas of Yavatmal district. The district headquarters and the division headquarters are located at Yavatmal. Most of the land of the division is high level plateau and gently sloping towards the eastern portion. The area is situated on 'Deccan Trap' with greatly varying basalts. As a result of disintegration of basalt different types of soil are formed with considerable variation in depth and physical properties. In this division, River Painganga and its tributaries Pus, Arunavati, Adan and Waghadi along with the River Wardha with its tributaries Bembla and Nirguda drain the area. Painganga and Wardha flow throughout the year. The forest type belongs to the Sub group 5A - Southern Tropical Dry Deciduous Forest. The area of this division lies between longitude 77°34'9" to 78°30'52" East and latitude 19°53'58" to 20°41'46" North. The boundaries of the division are as follows.

North	:	Dhamangaon taluka of Amravati district
East	:	Ralegaon taluka of Yavatmal district
South	:	Kinwat taluka of Nanded district
West	:	Karanja taluka of Washim district.

The total geographical area of the division is 4,77,920.43 ha and the gross forest area is 95,523.22 ha which is about 20%. The total forest area of Yavatmal Division is 83,534.61 ha. out of which 80781.16 ha. is reserved forest, 308.41 ha. is protected forest and 2445.03 ha. is unclassified forests. A total of 83,534.61 ha shall be dealt in this working plan. This Plan replaces the working plan written by Shri G. Rama Krishna Rao, IFS.

2. MAINTENANCE/INCREASE IN THE EXTENT OF FOREST AND TREE COVER

The division comprises of Yavatmal, Hiwari, Jodmoha, North Arni, South Arni, Ner, Darwha and Wadgaon ranges. The area details are summarized in the table given below.

RANGEWISE DISTRIBUTION OF THE FOREST AREA (HA)

Sr. No.	Range	No. of Compts.	Total Area (ha.)	RF (ha)	PF (ha)	Un-Classed (ha)
1	Yavatmal	73	8902.41	8852.93	10.85	38.63
2	Hiwari	51	11536.44	11511.7	0	24.74
3	Wadgaon	38	7360.99	6902.2	0	458.79
4	Jodmoha	85	13370.86	11596.38	297.56	1476.92
5	Ner	83	7180.06	7122.07	0	57.99
6	Darwha	186	15233.9	15059.13	0	174.77
7	North Arni	51	10777.78	10656.38	0	121.4
8	South Arni	36	9172.17	9080.38	0	91.79
	Total	603	83534.61	80781.17	308.41	2445.03

Yavatmal Division was reorganised in 2013 with 8 ranges, 32 rounds and 126 beats.

Land use, land use change and forestry (LULUCF):

As per the forest cover assessments between 2016 and 2020, there has been an improvement in the quality of forest cover in Yavatmal Division. The details are as follow:

FOREST COVER COMPARISON CHART

Forest Density Class	Area in Ha.				% Change (5/2*100)
	2016	2018	2020	Change w.r.t. to 2016 (4-2)	
1	2	3	4	5	6
VDF	133.83	172.09	193.32	59.49	44 %
MDF	21198.3	21892.7	23752.66	2554.32	12 %
OF	34337	36048.4	32273.52	-2063.48	-6 %
Scrub	3022.29	2847.16	3181.73	159.44	5 %
No Vegetation	21512.3	19345.2	20889.22	-623.10	-3 %
Water	863.35	761.55	776.68	-86.67	-10 %
Other	2467.51	2467.51	2467.51	0	0
Total	83534.61	83534.61	83534.61	0	0

MAINTENANCE, CONSERVATION AND ENHANCEMENT OF BIODIVERSITY

Biodiversity Assessment :

Importance Value Index is assessed for all the trees enumerated. A snapshot of top 10 species of the division is given below:

Species Name	Relative Frequency			Relative Density			Relative Basal Area		IVI
	Plots (Count)	Frequency	Relative Frequency (%)	Species	Density	Relative Density (%)	Basal Area (Sum)	Relative Basal Area (%)	(Importance Value Index)
				(Count)					
Teak	810	0.507519	16.463	19392	121.5038	47.985	963.8042	60.234	124.682
Palas	1276	0.799499	25.935	9570	59.96241	23.680	133.0467	8.315	57.930
Alai	123	0.077068	2.500	3784	23.70927	9.363	190.741	11.921	23.784
Dhawada	198	0.12406	4.024	702	4.398496	1.737	130.1882	8.136	13.898
Lendia	368	0.230576	7.480	1212	7.593985	2.999	20.56781	1.285	11.764
Tendu	346	0.216792	7.033	1001	6.27193	2.477	13.27223	0.829	10.339
Hiwar	267	0.167293	5.427	633	3.966165	1.566	9.320395	0.582	7.576
Neem	243	0.152256	4.939	526	3.295739	1.302	7.562449	0.473	6.713
Amaltas	249	0.156015	5.061	518	3.245614	1.282	3.699634	0.231	6.574
Ain	180	0.112782	3.659	501	3.139098	1.240	19.42163	1.214	6.112

Conservation of genetic resources:

A total of 428 Biodiversity Management Committees have been established at the gram panchaayt level in the talukas of Yavatmal Division. The details are as follows:

List of Taluka-wise Biodiversity Management Committees established in Yavatmal Division

S.No	Taluka	BMCs established
1	Yavatmal	88
2	Babulgaon	65
3	Ner	51
4	Darwha	86
5	Arni	77
6	Kalamb	61
Total		428

3. MAINTENANCE OF FOREST HEALTH AND VITALITY

Status of Regeneration: Data on regeneration status was collected by SOFR unit Amravati during collection of enumeration data. The status of natural regeneration is poor. Heavy grazing, fire incidences, trampling due to cattle movement, human population pressure to meet their demands like firewood and small timber, poor site quality and erratic rainfall are major factors that influence the establishment of regeneration in this forest area. The details of regeneration are given below:

Regeneration status

Sr. No.	Range	No. of sample plots	No of seedlings/ha			Total
			R1	R2	R3	
1	North Arni	216	91.20	42.82	30.09	164.07
2	Yavatmal	159	125.64	81.12	63.88	270.64
3	Wadgaon	139	315.79	136.39	41.25	493.43
4	South Arni	187	212.99	89.50	40.29	346.89
5	Ner	160	0.06	0.13	5.81	6.00
6	Jodmoha	198	67.22	40.40	52.63	161.92
7	Hiwari	238	123.32	56.64	30.46	210.42
8	Darwha	309	12.14	10.81	17.06	40.00
	Weighted Average		105.74	51.48	33.50	190.72

4. CONSERVATION AND MAINTENANCE OF SOIL AND WATER RESOURCES

Trees and forests perform an incredible role in reducing storm water in several ways and removing or filtering pollutants that would otherwise wind up in our waterways. Forests filter and regulate the flow of water, in large part due to their leafy canopy that intercepts rainfall, slowing its fall to the ground and the forest floor, which acts like an enormous sponge, before gradually releasing it to natural channels and recharging ground water.

In this division, river Painganga, river Wardha and their tributaries drain the area. There are other small rivers and nalas from forest that have water in their streams till December. There are one major, two medium and eighteen minor

irrigation projects which form the major source of irrigation. Many areas feel the shortage of water during summer. Erratic rainfall further worsens the situation. The drainage is poor due to high compact soil.

Soil and moisture conservation works are carried out on watershed basis as forests are customarily at the top of a watershed. Good forest management secures water at its source. Appropriate forest management strategies produce clean and abundant water for our watersheds, as well as healthy forests. In Yavatmal Forest Division over the past ten years various soil and moisture conservation measures have been undertaken under different schemes. A total of 174 forest tanks, 7 cement check dams and 94 earthen bandhs have been created.

5. MAINTENANCE AND ENHANCEMENT OF FOREST RESOURCE PRODUCTIVITY

The enumeration data demonstrates that growing stock has decreased in comparison to the previous enumeration. One possible reason is that Ghatanji taluka, which possesses medium-dense canopy cover forests, has been transferred to Pandharkawada Division during the Rao's Plan. The details of comparison are given below:

Working Circle Wise Growing Stock Comparison

Sr. No.	Working Circle	No. of Trees per Ha.		Change in %
		Previous Enumeration (2007-2008)	Current Enumeration (2022-23)	
1	Selection-cum Improvement	389.08	319.43	-17.90
2	Improvement	356.80	331.48	-7.10
3	Afforestation	150.37	120.03	-20.18
4	Fodder Improvement	189.88	202.24	6.51

Incremental Volume of Identified Timber Species: A comparative assessment of Mean Annual Increment of Teak in site quality III and IV for coppice and seed origin has been provided.

Carbon Stock: Carbon Stocks in different pools in various forest density classes in Yavatmal Division is estimated as per FSI ISFR 2021 Report. The details are as follows:

Carbon Pool	Carbon Stock in Forests of (in million tonnes)			% to India's	% to MH's
	India	Maharashtra	Yavatmal Division		
AGB	2238	143	1.09	0.049	0.759
BGB	699	49	0.46	0.065	0.930
Dead Wood	30	2	0.02	0.059	0.881
Litter	136	9	0.05	0.040	0.604
SOC	3979	290	2.56	0.064	0.884
Total	7082	493	4.18	0.059	0.848

6. OPTIMISATION OF FOREST RESOURCE UTILISATION

Recorded Removal of Timber: Timber is mainly in demand for the purpose of construction, furniture making and preparation of agriculture implements by the local people. The main preferred species is Teak, which is followed by Ain, Dhawda, Kalam, Tiwas, Bija, Behada and Khair. Most of these species are also in demand locally for various construction purposes. Local demand of timber is met from the timber removed from the forest division. The timber depot at Jodmoha (Jodmoha Range) caters to the needs of the local population.

Timber Auctioned and Revenue Realized

Sr. No.	Year	Timber (m ³)	Revenue (Rs.Lakhs)
1	2012-2013	10763.15	2726.5
2	2013-2014	5791.92	1162.73
3	2014-2015	2400.95	446.78
4	2015-2016	2482.91	549.37
5	2016-2017	2604.73	701.99
6	2017-2018	3066.55	743.12
7	2018-2019	1903.8	466.71

Sr. No.	Year	Timber (m ³)	Revenue (Rs.Lakhs)
8	2019-2020	1708.45	380.99
9	2020-2021	1310.01	337.6
10	2021-2022	721.56	189.06
	Total-	32754.03	7704.85

Recorded Removal of Fuel Wood

With the introduction of modern cooking fuels like LPG gas and electric implements, dependence on fuelwood has decreased. Nevertheless, firewood is the main cooking fuel for most of the villagers. Dhawda as fuel wood is the most sought after species for fuel wood. The other hard wood species like Khair, Ain, Babul, etc. are also preferred over some of the soft wood species like Salai, Moyen, Beheda, etc. As the demand exceeds supply, illicit lopping of the trees and carrying of head loads of lopped branches mostly by the women is frequently noticed in this area. Majority of the ginning mills and processing factories of the area use alternatives such as coal and oil than firewood.

Firewood auctioned and revenue realized

Sr. No.	Year	Quantity (m ³)	Revenue (Rs. Lakhs)
1	2012-2013	1626.68	30.23
2	2013-2014	1405.34	35.31
3	2014-2015	1202.31	19.64
4	2015-2016	889.52	19.76
5	2016-2017	636.68	22.24
6	2017-2018	426.31	8.48
7	2018-2019	483.72	12.09
8	2019-2020	94.42	2.54
9	2020-2021	519.17	21.76
10	2021-2022	204.31	7.34
	Total	7488.46	179.39

7. MAINTENANCE AND ENHANCEMENT OF SOCIAL, ECONOMIC, CULTURAL AND SPIRITUAL BENEFITS

Status of Empowerment of JFMCs: In Maharashtra JFM committees in the forest division are guided by Government of Maharashtra Resolution dated March 16, 1992, October 5, 2011 and July 10, 2012. In this division 251 JFM committees have been formed till March, 2023.

Maharashtra forest department has issued guidelines for grading of JFM committees into A, B and C categories based on various criteria. Based on this, of the 251 committees, 86 committees, 116 committees and 49 committees have been graded into A, B and C category committees respectively. 9 JFMCs have been awarded Sant Tukaram Vangram Yojana Award during the plan period. General body meetings and executive committee meetings of JFM committees are conducted periodically.

Labour Welfare: Members from the JFM villages are given priority in all the activities for semi skilled and unskilled labour. Works of plantations, protection, boundary pillar repairs, fire line tracing and all other works are done primarily through JFM Committee members. In Yavatmal division there are Forest Labour Cooperative Societies which perform tree felling activity in their allotted coupes after due approval.

Use of Indigenous Knowledge: The availability of medicinal plants within the forests are collected and used for various ailments. Though the exact quantum, methodology and usage is not recorded but local medical practitioners or vaidhyas have many indigenous and traditional knowledge. They use forest based resources to create various formulations which are still used by local villagers. Apart from this, presence of other indigenous knowledge cannot be ruled out. Indigenous and traditional knowledge related to forest and environment needs to be documented.

Extent of Cultural/Sacred Groves: There are no sacred groves in this division. Nevertheless, there are sites of cultural significance in the division. Shri Mandev

temple in compartment number 496 of Hiwari range draws huge crowds during Shivratri. Shri Chousaleshwar Mandir located in compartment number 468, currently under FDCM, is also visited by large number of devotees during Shivaratri. Other famous religious sites include Maruthi devasthan in compartment no. 465, Yavatmal range and Mahalakshmi temple in compartment no. 114, Darwha range.

Ecotourism Areas and Activities: Various important ecotourism sites have been identified in the division. Some of the sites have been developed while there is a need to develop other sites.

Status of Implementation of FRA, 2006: The status of implementation of this Act (up to March 2023) is summarized in the table below:

Status of Implementation of FRA, 2006 till March 2023

Sr. No.	Type of FRA benefit	No. of claims submitted at Gram Sabha	No. of claims accepted by DLC	Percentage of acceptance	Total Area of accepted claims (ha.)
1	Individual Forest Rights	371	163	44%	200.46
2	Community Forest Rights	217	217	100%	42531.01
3	FRA U/S 3(2)	34	34	100%	8.68
	Total	622	414	67%	42740.15

8. ADEQUACY OF POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

The management of forest is done according to the existing policies, acts and regulations of Government of India and Government of Maharashtra. The manpower required for the execution of the plan is adequate.

Forest Resource Accounting: An estimation of ecosystem services provided by the forests of Yavatmal Forest Division was carried out using IIFM Report “Revision of Rates of NPV applicable for Different Class/Category Of Forests”. The details are as follows:

Sr.No.	Ecosystem Service	Value (in Rs crores/ year) of Yavatmal Forest Division
1	Timber production	152.65
2	Bamboo production	14.20
3	Fodder production	100.64
4	NTFP	68.03
5	Fuel wood production	42.71
6	Carbon sequestration	10.75
7	Gene pool conservation*	544.79
8	Pollination and seed dispersal	81.63
9	Soil conservation	36.92
10	Water recharge	5.00
11	Carbon storage*	1185.50
12	Water purification	23.69
Total		2267.57

Excluding the economic value of genepool conservation and carbon storage which are one-time values, the annual value of ecosystem services provided by the forests of Yavatmal Division is Rs. 546.05 crores.

9. FIVE YEAR PLANS

Various working plan were in operations during the five year plans. 12th five year plan concluded in the year 2016-17. The budget allocations in the five years plans have increased considerably. Fund sources have increased with the introduction of various new schemes.

10. PAST SYSTEMS OF MANAGEMENT

The regular Working Plan to manage forests was started in 1915 based on the requirement of treatment to the forest, needs of the local population and policies, rules laid down by the Government from time to time. The working plans that followed are listed below.

1. Malcolm's Working Plan (1915-16 to 1937-38)
2. Robinson's Working Plan (1938-39 to 1955-56)
3. Thosre's Working Plan (1955-56 to 1970-71)

4. Pal's Working Plan (1976-77 to 1991-92)
5. Kanekar's Working Plan (1982-83 to 1997-98)
6. Yadav's Working Plan (2001-02 to 2010-2011)
7. G. R. K. Rao's Working Plan (2012-13 to 2021-22)

In G. R. K. Rao's working plan, the following working circles were constituted:

1. Selection-cum-Improvement Working Circle.
2. Improvement Working Circle.
3. Afforestation Working Circle.
4. Fodder Improvement Working Circle.
5. Non Wood Forest Produce (Overlapping) Working Circle.
6. Joint Forest Management (Overlapping) Working Circle.
7. Wildlife Management (Overlapping) Working Circle.
8. Forest Protection (Overlapping) Working Circle.

11. STATISTICS OF GROWTH AND YIELD

Tree Enumeration: SOFR unit, Amravati, has completed the enumeration of forest resources in Yavatmal forest division during 2022-23.

The working circle wise and category wise Growing Stock as per 2022-23 enumeration

Sr. No	Working Circle	Volume in cum per Ha.				
		General Utility Species	Special Utility Species	Minor Forest Produce Species	Other Species	Total
1	Selection-cum-Improvement	41.98	6.32	5.94	1.93	56.22
2	Improvement	32.50	6.31	5.51	2.58	46.91
3	Afforestation	2.67	0.75	4.73	0.75	8.90
4	Fodder Improvement	11.97	4.48	6.31	0.96	23.69

Stem Analysis : During the revision of this working plan, stem analysis was carried out by Working Plan Office, Yavatmal during 2022-2023. The stem analysis of teak was carried out by selecting four representative teak trees of seed origin and coppice origin from comp. no. 21 of Belora beat (South Arni range), compt. no. 339 of Nanza beat (Jodmoha range) and comp. no. 43 of Shendursani beat (North Arni range). The results obtained have been computed and age/diameter, height/age, age/volume curves were drawn. Yield calculation was carried out.

FUTURE MANAGEMENT

1. BASIS OF PROPOSALS

This working plan is prepared for the scientific management of of Yavatmal Forest Division. The primary objective is to treat the forests as per the site requirements so as to optimize the growing stock. Various aspects of wildlife management, protection, NTFP, JFM have been taken into consideration for the preparation of this plan. The existing policy framework of Central and State Government, various legislations governing forests and wildlife, orders of Hon'ble Supreme Court and High Courts, Government resolutions, Circulars, Notifications have formed the basis of the prescriptions of this working plan.

Distribution of Area to Various Working Circles

The area under the different working circles in the division is given below.

Area Allocation to Different Working Circles

Sr. No.	Working Circle	Number of Compartments	Area in (ha)	Percentage
1	Selection cum Improvement WC	143	41926.46	50 %
2	Improvement WC	88	10975	13 %
3	Afforestation WC	227	16919.23	20 %
4	Fodder Improvement WC	110	12472.43	15 %
5	Miscellaneous WC	35	1241.49	1 %
Total		603	83534.61	100 %

2. SELECTION CUM IMPROVEMENT WORKING CIRCLE

Area Allocation: The total forest area included in this working circle is 41926.46 ha. It constitutes 50% of the total forest area of the division. Forest areas with density of 0.4 and above, which can produce medium to large size timber and poles are included in this working circle. Most of the crop is of site quality IV with a few patches of site quality III.

Special Objectives of Management: The special objects of management are:

1. To gradually replace coppice teak crop with high forest of seed origin by encouraging establishment of natural regeneration.
2. To increase the stocking of the miscellaneous species.
3. To obtain medium to large sized timber by utilizing the full potential of the site.
4. Encouraging natural regeneration assisted by artificial regeneration by introducing selected germ plasm.

Silvicultural System: The Selection cum Improvement system is aimed at harvesting matured trees and carrying out improvement felling for removal of malformed trees. The percentage of teak improved over the years which constitute approximately 66% of the growing stock. However, miscellaneous species have not shown substantial increase in composition of the crop. Teak trees of coppice origin would be felled on priority to replace age old coppice trees with teak trees of seed origin. There would be no felling of non teak species. Silvicultural operations like CBO, thinning, cleaning are included in this system. Thinning would also be carried out to decongest natural regeneration pole crop. Natural regeneration will be given suitable treatments to regenerate the area. Areas poor in natural regeneration will be supplemented by artificial regeneration to increase productivity and density of the crop. Soil and moisture conservation works would also be taken up on watershed basis to protect and improve soil and water regime.

Harvestable Diameters: As felling is restricted to only teak trees, harvestable girth is prescribed for teak alone. Harvestable girth has been determined at maximum

volume production as per the CAI and MAI curves in stem analysis exercises for site quality IV forests. Harvestable girth for teak trees of coppice origin is fixed at 75 cm (GBH over bark) and for teak trees of seed origin at 120 cm (GBH over bark). As the site quality III is very limited separate harvestable girth for site quality III is not prescribed. The harvestable girth prescribed above would be applicable to site quality III also.

Calculation of the Yield: Annual yield shall be regulated by area, and the efforts are made, for making annual coupes as equi-productive as possible. For yield calculation in Selection Cum Improvement Working Circle, Sagreiya's modification of Brandis' formula is used. As per these calculations, 17 trees of coppice and 0.5 trees of seed origin are to be felled per hectare. Yield forecast based on above estimations is given below:

Unit	Expected Yield (m ³)		
	Coppice Trees	Seed Origin Trees	Total
Per Ha.	3.16	0.22	3.38
Per Coupe (80 ha)	252.96	17.68	270.64
Annual Average	3314.25	231.64	3545.89

Coupe Demarcation and Treatment Map

1. Demarcation and Marking: One year in advance
2. Treatment Map to be prepared as prescribed
3. A type: Protection area
4. B type: Understocked and Blank areas (density <0.4)
 - a. B1-Area with rootstock and natural regeneration
 - b. B2-Area without natural regeneration
5. C type: Pole crop and plantations
6. D type: Well stocked areas (density >0.4)

Marking

1. A type: No marking
2. B type: Dead and diseased trees, live high stumps
3. C type: Marking for thinning

4. D type: Enumeration of trees in approach girth class and above is prescribed. Trees above selection girth, dead and malformed trees, live high stumps are to be marked.

Silvicultural System

1. Trees above selection girth are prescribed for felling as per principle of safeguarding future yield.
2. Openings created by felled trees would promote natural regeneration of light demander species
3. Hygienic operations (removal of dead, malformed, live high stumps) will improve the existing crop.

Regeneration:

1. Natural Regeneration of seed origin of valuable species to be preferred and managed through cultural operations in D areas and B1 areas.
2. Artificial Regeneration in B2 type area if site is suitable.
3. Strict protection from fire and grazing
4. Tending of natural regeneration of valuable species in B type area.

SMC Works: To be taken up on watershed basis

1. SMC works as prescribed in the Chapter on 'Miscellaneous Regulations' shall be carried out.
2. SMC works will be along with marking operation and completed before onset of monsoon.
3. SMC Works are to be based on the requirement of site.

Subsidiary Operations

1. CBO works: Subsequent year of main felling
2. CBO works include cutting left over marked trees, removal of damaged trees, singling of multiple coppices shoots, etc
3. NR or ANR should compulsorily be carried out immediately after CBO in the same year in D areas. This is necessary to regenerate the area felled.
4. Cleaning operations: 6th Year

Associated Regulations and Measures

Fire Protection: The main felling coupes shall be fire traced and rigidly protected from fire for a period of 5 yrs. The fire tracing activities shall be completed by 15th of February to avoid fire hazards to standing crop as well as to the natural regeneration. Effective protection against fire shall be under taken for a period between February 15 to June 15 to ensure survival and establishment of natural regeneration of all species for developing it into the future growing stock.

Grazing: The coupe of main felling will be closed to grazing till cleaning operations in the 6th year.

3. IMPROVEMENT WORKING CIRCLE

Area Allocation: The extent of area included in this working circle is 10975 ha, which constitutes around 13% of the division area. The density of the forest varies from 0.1 to 0.7 and the crop mostly young to middle age. The site quality in general confirms to IV.

Special Objectives of Management

1. To improve the crop composition.
2. To check the soil erosion and conserve soil and moisture
3. To restore the quality and density of the forests.

METHOD OF TREATMENT

Various treatments proposed for deferent categories of the areas are as under:

1. **A Type:** No felling shall be done.
2. **B Type:** Teak and suitable miscellaneous species shall be promoted with tending of natural regeneration. Dead and malformed trees will be cut back.
3. **C Type:** No plantation will be done. Thinning will be done in the young pole crop to create an interval between remaining trees to 1/3rd of the height of the dominant pole in the patch as a thumb rule.

- 4. D Type:** No plantation will be done. Felling will be carried out as provided under Marking Rules.

Prescriptions for soil and moisture conservation works, regeneration works and subsidiary silvicultural operations are provided.

4. AFFORESTATION WORKING CIRCLE

Area Allocation: Forest areas with density of less than 0.4 are included in this working circle. A total of 16919.23 ha is included in this working circle which constitutes 20% of the division area.

Special Objectives of Management:

1. To increase vegetative cover, improve quality and composition of the area by tending to natural regeneration and supplementing with plantations.
2. To improve soil condition by taking up suitable soil and moisture conservation measures.
3. To meet the local demand for fuelwood, fodder and NTFP requirements along with better employment opportunities.

Silvicultural System: The main limiting factors for the establishment of seedlings in this area are insufficient sub soil moisture, highly compact soil structure and heavy biotic pressure. Therefore intensive soil and moisture conservation measures shall be undertaken in these areas. Tending of existing rootstock, saplings, coppice shoots, supplemented by plantations are the main activities in this working circle.

Treatments: Various treatments proposed for deferent categories of the areas are as under:

1. A Type: No felling is prescribed. The soil and moisture conservation works shall be carried out on watershed basis as given in the Chapter on 'Miscellaneous Regulations'.

2. B Type: Soil and moisture conservation works shall be carried out in order to increase the productivity of the soil and to check soil erosion. Teak and other species shall be planted in the under stocked areas, where the area exiting 5 hectare

and above in extent at one place as per requirements of site. No standing tree shall be marked for felling except dead trees retaining at least 2 trees/ha.

3. C Type: No plantations shall be carried out in this area. Marking for thinning shall be done in the young pole crop as well as in old plantations to create appropriate spacing as per the stand table.

4. D Type: No planting will be done in these areas. Felling will be done as prescribed in marking rules.

Associated Regulations and Measures: All annual coupes and plantation sites shall be provided fire protection. Effective protection against fire must be ensured during the fire seasons so that the survival and establishment of the seedlings for development into future growing stock can be achieved. Fire protection can be achieved through Joint Forest Management Committees. A comprehensive fire management plan shall be prepared out every year. The coupe shall remain closed to grazing for a period of 5 years after main felling.

5. FODDER IMPROVEMENT WORKING CIRCLE

Area Allocation: Areas are mostly open and blank with sparse tree growth. The density ranges from 0.1 to 0.4. The extent of area allotted to this working circle is 12472.43 ha which constitutes 15% of the division area.

Special Objectives of Management:

1. To improve the quality and quantity of fodder grasses by introducing better varieties of fodder grass species and fodder tree species.
2. To meet the local demand for fodder and to reduce the heavy grazing pressure on the forests.
3. To improve the site and conserve soil and moisture through extensive soil and moisture conservation works.

Silvicultural System: Based on the grass and forest resources of the site, the silvicultural systems to be followed are regulated and rotational grazing in pasture areas. Regulating seeding, grass cutting and complete closure to grazing in identified grasslands is prescribed.

METHOD OF TREATMENT:

1. As the area is highly degraded, extensive soil and moisture conservation measure works such as gully plugging, nalabunding at suitable places and contour trenches depending upon the site quality are prescribed.
2. Broadcasting of seed of superior grass species shall be taken up after ploughing along with contour trenches at the onset of monsoon. The tussocks of palatable grass species of freshly excavated and heaped soil bund on the lower side of trenches.
3. Seed broadcasting and tussock planting of good palatable grasses like Sheda (*Sehima nervosum*), Paunya (*Sehima salcutum*), Marvel (*Dicanthum annulatum*), Ned Gavat (*Panicum antidotale*), etc. The fodder tree species prescribed are Babul (*Acacia nilotica*), Anjan (*Harwickia binata*), Sirus (*Albizzia lebbek*), Apta (*Bauhinia species*), Tiwas (*Ougenia daldergioides*), etc. However the selection of fodder species shall be as per the site requirement.
4. The area shall be effectively fire traced and protected from fire every year.
5. Plantation of tree species like Anjan, Babul, Subabhul, Kusum, Sirus, Tiwas etc. of fodder value shall be taken up by poly pot planting during the monsoon.
6. The cutting of grasses for stall feeding of cattle shall be allowed in these areas for 1st three years after planting. The grazing shall be regulated as per Government policy on rotation basis.

6. MISCELLANEOUS WORKING CIRCLE

General Constitution: This working circle consists of the following areas. Areas of Reserve Forest handed over to other departments which are yet to be de-notified.

Method of Treatment:

The areas which were handed over to other departments will have the same legal status until they are denotified. Therefore it is prescribed that a proposal shall be

mooted to denotify these areas and necessary entries should be made in Form No.1 after denotification.

7. WILDLIFE MANAGEMENT

Special Objectives of Management: The special objects of management are:

1. To ensure protection and conservation of wildlife in this division.
2. To ensure scientific management of wildlife by undertaking measures like habitat management and regular monitoring of the population of wild animals.
3. To ensure protection of ecologically sensitive and special habitat sites for wildlife conservation, such as riparian zones, mesic sites (natural water seepage sites), perennial water holes, natural grasslands, sacred groves, high altitude plateaus, natural resting, breeding and nesting sites (caves, snags, overhangs, groves of old Ficus trees, thick Bamboo groves).
4. To reduce dependency of fringe villages on forests and to reduce human wildlife interactions.
5. To involve local people in wildlife conservation and reduce human wildlife interactions.
6. To promote and encourage ecotourism without disturbing and damaging wildlife.

Threats and Challenges to Wildlife:

Wildlife in this division face threats in the form of habitat fragmentation, habitat loss, poaching, fire, grazing, diseases and human-wildlife conflict

FUTURE MANAGEMENT:

1. **Standing Order (Wildlife) No.001:** The PCCF (WL) MS, Nagpur has issued a standing order (Wildlife) No.001. This order prescribes duties and lists measures for the protection and conservation of the wildlife outside Protected Areas.

2. **Creation of Data Base:** The Division shall carry out survey, annual population estimation of the wildlife, including the migratory and other rare birds, in addition to All India Tiger and Leopard population Estimation.
3. **Delineation and Mapping of Special Habitat Areas:** Delineation of the special wildlife habitat sites including natural water seepage sites (mesic sites), water holes, natural wallows and saltlicks used by the wildlife, breeding sites, dens or nesting sites of animals and birds shall be carried out and marked on the Divisional/Range maps.
4. **Habitat Development Works:** The most important factors in the habitat are water, food, safe places for resting, breeding, and nesting. Wallows and salt licks are other factors.
5. **Marking Reservations, other Restrictions:** The following, prescriptions have been made for implementation along with coupe operations and other treatment prescriptions, in the wildlife area-specific coupes.
 - a. No felling of trees or harvesting of any sort shall be allowed in riparian zone.
 - b. While marking of dead, wind fallen and malformed trees in annual coupes, 2 trees per hectare shall be kept reserved, as snags and dens to provide for nesting and resting of wildlife. No fruit tree of wildlife importance shall be marked for felling in the annual coupes.
 - c. While harvesting at least 2 down hollow logs, of low commercial value, per hectare shall be reserved for shelter of wildlife.
 - d. Tendu collection centres or labour camps shall not be allowed near water holes frequented by the large mammals or other important wildlife species. The labour camps shall be established away from areas of high wildlife density.
6. **Water Management:** Water management includes maintenance, strengthening of all existing waterholes and creation of new artificial waterholes.
7. **Prey Base Augmentation:** To improve the prey base, care should be taken to improve fodder availability in the forest, especially during the summer season.

The open areas in wildlife rich zones should be developed into meadows for the herbivores.

8. **Development of Nesting Sites:** To provide suitable nesting places to these birds, seed sowing of species like Babul and stake planting of species such as Banyan and other *Ficus spp.* should be done near water-bodies and in the riparian areas.
9. **Eco-Development, Awareness Generation and Eco-Tourism:** To seek their willing support and goodwill it is proposed to undertake eco-development works by the division in villages around these sites. It is also proposed to promote and encourage eco-tourism in the Division by extending and developing camping and nature interpretation facilities at sites/spots, rich and unique in natural and cultural beauty and diversity.

8. NTFP MANAGEMENT

General Constitution of the Working Circle: The species of non timber forest produce are available throughout the tract with varying degree. These contribute to a large extent to meet the non wood forest produce demand of local forest dwellers directly or indirectly. They play an important role in generating employment to the local people. The important non wood forest produce Moha flower, Moha seed, Tendu, Myrobalon (Hirda, Behada, Awla), Charoli, Kulu, Dhawda and Honey. The people living in forest mostly supplement their food with Leaves, tubers, flowers and fruits all year around. The medicinal plants play a key role in the health support systems in remote villages. Estimations of major NTFP produce for Yavatmal Division is provided below:

Sr. No.	NTFP	No. of Trees	Approx Production per Tree(kgs)	Estimated Production (kgs) Potential	MSP/KG In Rupees (TRIFED)	Total Economic Potential (Rs. Lakhs)	Individual Per Day collection (kgs)	Man days Generation Potential per year
1	Moha Flowers	45536	25	1138400	30	34.15	10	113840
2	Charoli	17796	0.05	890	126	0.11	1	890
3	Moha Seeds	45536	10	455360	29	13.21	25	18214

Sr. No.	NTFP	No. of Trees	Approx Production per Tree(kgs)	Estimated Production (kgs) Potential	MSP/KG In Rupees (TRIFED)	Total Economic Potential (Rs. Lakhs)	Individual Per Day collection (kgs)	Man days Generation Potential per year
4	Karanj Seeds	9945	2	19890	19	0.38	5	3978
5	Palas Seeds	5008936	1	5008936	20	100.18	5	1001787
6	Beheda	39778	5	198890	17	3.38	2	99445
7	Awala fruit	10991	1	10991	30	0.33	1	10991
8	Palas gum	5008936	0.2	1001787	195	195.35	0.5	2003574
9	Khair gum	64902	0.25	16226	195	3.16	0.25	64902
10	Karu gum	6804	0.3	2041	195	0.40	0.1	20412
11	Dhawada gum	367424	0.3	110227	195	21.49	1	110227
12	Salai gum	106774	0.3	32032	195	6.25	1	32032
Total						378.39		3480293

Special Objects of Management:

1. To protect and manage NTFP species and to utilize the existing potential optimally and to enhance the productivity.
2. To improve stocking of various NTFP species in the forest areas and enhance collection of various NTFPs by improved collection techniques.
3. To get enhanced economic returns by training the local communities on value addition techniques and marketability of various NTFPs found in the Division.
4. To generate employment and improve the economy of the local people and thereby improving their socio-economic conditions.

Treatment:

1. Documentation of NTFP Collection
2. Management of Tendu collection
3. Management of gum collection
4. Management of Hirda, Beheda, Aonla, Char and Other NTFPs
5. Resource Augmentation
6. Detailed inventory and prioritization
7. Forward and backward linkages

8. Capacity building
9. Income generation
10. Research and Development
11. Fire Protection Measures

9. JOINT FOREST MANAGEMENT

General Constitution: Yavatmal forest division has a total of 251 JFM committees in the forest fringe villages. The total area for these committees is 55,364.37 ha. This covers around 66% of the total area of the Division.

Special Objects of Management:

1. To strengthen and empower local institutions for protection and conservation of forests and wildlife resources through peoples' participation.
2. To increase the vegetation cover and to carry out soil and moisture conservation works with the active co-operation of local people.
3. To involve local people in forest protection to generate sustainable employment.

General Prescriptions:

1. For those JFMCs whose micro-plans have expired, new micro-plans will be prepared through the process of participatory rural approach. Micro-plans are to be dovetailed with the prescriptions of the this Working Plan.
2. Silvicultural management, maintenance of forest boundary, removal of forest encroachment and control over illicit cutting, illicit grazing and fire should receive high priority.
3. Documentation of successful initiatives under the JFM approach must receive importance at the Range and Division level. A compilation of works undertaken in JFM villages in a financial year should be done at division level and published. This work should be given wide publicity in print and electronic media.
4. Dedicated NGOs/Civil society groups can aid the village communities in strengthening JFM institution. Their services can be utilized by the FD in

areas of capacity building of JFMCs in microplanning, community motivation, eco-tourism initiatives, evolving models for enhancing livelihoods etc.

5. Periodic evaluation of JFMCs should be done to identify 'Performers' and 'Non-Performers'. While Performing JFMCs should be rewarded, the Non-Performers should be given opportunity for improvement.
6. The JFM villages should also be covered with other source of efficient fuel management like improved chulhas with help from the Maharashtra Biodiversity Board.
7. The Division should make all efforts to ensure that all JFM Committees have Public Biodiversity Registers as part of the many records to be kept.

10. MAINTENANCE AND ENHANCEMENT OF FOREST HEALTH AND VITALITY

General Constitution: The forest of this division has pressure of illicit felling, encroachment, grazing and fire because of excessive biotic pressure of the adjoining villagers and nature of vegetation, climate and social factors.

Special Objects of Management:

1. To protect the forest from illicit felling, encroachment, fire and grazing.
2. To sensitize local people about forest protection and involve them in preventing forest offences with their cooperation.
3. To raise the morale of field staff and strengthen their capabilities to deal with forest offences.

Protection Strategy: The strategy to be adopted to protect forest is of integrated approach by undertaking collective measures based on situation and time. The strategy shall be direct field oriented in a participatory manner with active involvement and co-operation of local people especially members of Joint Forest Management committee.

Protection Measures: A protection plan is to be prepared at division level in January of every year for taking strict protection measures as per GR dated August 13, 2014.

Fire Protection: Prevention of fires and effective control of fires as prescribed in the plan is essential for sustainable forest management.

Grazing Control: To control grazing, grazing units are formed in the division. The number of cattle heads is fixed as per the carrying capacity of the area.

Encroachment: Survey and demarcation works shall be taken up on top priority. Precast pillars of 1st and 2nd class type shall be erected after the survey is over which can be completed in a phase manner. The existing cairns shall be repaired and maintained under 1/5th boundary demarcation scheme.

11. MANAGEMENT OF SPIRITUAL, CULTURAL ASPECTS OF FORESTS AND ECOTOURISM

Forests have long been revered as sacred spaces, places of worship, and sources of inspiration. They are believed to be inhabited by spirits, deities, and ancestral beings, and are often associated with rituals, ceremonies, and traditional practices. Indigenous communities, in particular, have deep spiritual connections with forests, viewing them as integral parts of their identity, heritage, and worldview. Forests serve as providers of resources, healers of ailments, and symbols of wisdom, strength, and resilience.

Recognizing and respecting these values is essential to ensure that ecotourism activities do not undermine or erode the cultural heritage and spiritual connection people have with forests. It involves engaging and consulting with local communities, indigenous peoples, and cultural experts to understand and incorporate their perspectives and knowledge. This includes integrating cultural practices and rituals into ecotourism experiences, promoting cultural exchange between visitors and local communities, and fostering a sense of respect and appreciation for the spiritual significance of forests. By managing the spiritual and cultural aspects of forests within the realm of ecotourism, we can create meaningful and respectful experiences for visitors while safeguarding the cultural heritage and spiritual values that are intertwined with these natural environments.

General objectives that guide ecotourism activities include:

1. The Eco-tourism activity should be concise and small for operationalization.
2. It should be proper in view of environmental, social and cultural aspects.
3. It should be proven and worthy of adoption.
4. Participation of local community should be ensured.
5. It should neither be degrading nor destructive.
6. It should be as per tourist requirements but definitely with some restrictions.

12. FINANCIAL FORECAST

Abstract of year-wise Requirement of Funds for Implementation of Working Plan (In Rs. Lakh) is given below:

Work	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total	Annual Average	Total Mandays to be generated
SCI	1388	1741	2083	2245	2418	2628	2759	2897	3042	3194	24395	2439	470275
IWC	429	554	666	729	795	857	899	944	992	1041	7906	791	153315
AWC	543	713	848	948	1056	1152	1209	1270	1333	1400	10472	1047	206245
FIWC	493	720	756	794	833	875	919	965	1013	1064	8431	843	156391
Boundary Demarcation	1465	1987	2270	2471	2685	2883	3027	3179	3338	3505	26809	2681	--
Total	4318	5714	6623	7186	7788	8394	8814	9255	9717	10203	78013	7801	1502176

Abstract of Year-wise Revenue Forecast:

Sr. No.	Working Circle	Approximate Annual Revenue (In Rs. Lakh)						Grand Total
		Timber		Fire Wood		Poles		
		Teak	Non Teak	Teak	Non Teak	Teak	Non Teak	
1	SCI	1418	5.32	32	0.38	8	0.06	1464
2	IWC	78	0.29	3	0.04	0.4	0.00	82
	Total	1496	5.61	35	0.42	8.4	0.06	1546

13. MISCELLANEOUS REGULATIONS

Boundary Demarcation: A well-defined forest boundary is a prerequisite for effective forest protection and its sustainable management. Forest areas vulnerable to boundary obliteration need to be identified for survey and demarcation so that

forest encroachment on the forest fringes could be detected promptly. Areas which are undemarcated and forest boundaries adjoining private land shall receive the highest priority to ensure protection of these areas. In order to keep the integrity of forests areas intact, strict vigilance over the forest boundary and periodic verification of the demarcation on the ground for the entire forest area has been prescribed.

Coupe Working: Various prescriptions regarding demarcation, treatment map, marking, felling, subsidiary silvicultural operations, thinning, irregular harvesting, natural regeneration, artificial regeneration, nursery operations are provided.

Soil Moisture Conservation Works: All soil moisture conservation works shall be carried out on watershed basis.

Watershed Treatment Methodology: Watershed development in forest areas tries to reduce the volume and the velocity of runoff through a series of interventions. The aim is to lower the water velocity, to make the water flow vertically downwards rather than horizontally across the village. Interventions are considered at diverse points in the village in a location-specific manner utilizing locally available materials and the vast knowledge of the local people regarding water flows and resource availability. Interventions are generally planned according to the “ridge-to-valley principle.”

14. SCIENCE AND RESEARCH

During the process of writing of this Plan various papers, articles, reports and documents were referred from these sources and used for the writing of the Plan. There is overall lack of research works/paper related to Yavatmal Forest Division. The research gap is in almost every aspect of the Working Plan as previous plans have not looked into the new aspects. Various aspects such as carbon stock, carbon sequestration, sacred grooves, biodiversity, Climate change, NTFP research, indigenous knowledge, TOF, Social and cultural aspects of forests, ecosystem services etc were found to be wanting in information.

Sample Plots: For forest resource assessment in the working plan, sample plots are systematically laid out in the forest area which is indicated on the Survey of India toposheet on the scale of 1:50000. The statistical sampling method namely

“Systematic plot sampling with random start” was used. The plot size of 50”x50” (50 seconds x 50 seconds) representing approximately 225 ha on the ground was laid.

15. TREES OUTSIDE FORESTS

Trees Outside Forests” (TOF), these are in the form of small woodlots and block plantations, trees along linear features, such as roads, canals bunds, etc. and scattered trees on farmlands, homesteads, community lands and urban areas. The total geographical area of the division is 477920.43 ha and the forest area is 83534.61 ha. which is about 17.47% of the total geographical area of the division. This is way below the targeted 33% forest cover as per the National Forest Policy. Hence it is important to focus on improving the tree cover outside forest area.

During the past ten years, Yavatmal Social forestry division has taken up 693 hectares of block plantation and 907.5 kms of roadside plantations. And Nagar Parishad of Talukas in Yavatmal Forest Division have taken up various plantations over the previous plan period, the details of which are provided in Chapter 16 (Part-II) of Volume I.

INTRODUCTION

VISION STATEMENT: To be a pioneer in environmental conservation and sustainable forest management by preserving and restoring the ecological balance that has been disrupted by degradation of forests, thereby ensuring long-term environmental stability.

GOALS OF MANAGEMENT:

1. Increase the forest and tree cover of the area.
2. Enhancing stability of the ecosystem.
3. Enhancing productivity of resources.
4. Ensuring equity of the local stake holders in use of the forest resources especially the bonafide needs of the local people and forest dwelling community.
5. Make forestry an important sector in the states' economy.
6. Conservation of biodiversity through people's participation.
7. Implement forest-based climate change mitigation strategies.

OBJECTIVES:

1. To maintain data on forest resources and undertake periodic resource monitoring.
2. To scientifically manage the forest resources in the area.
3. To prevent soil degradation and improve quality of land through various soil and moisture conservation measures.
4. To regulate activities of various stakeholders in forestry sector
5. To identify, augment and conserve biodiversity within the region.
6. To document, sustainably harvest and cause value addition of NTFP.
7. To develop skilled manpower for protection and management of forests.
8. To utilize modern technology in forest management.
9. To involve local and forest dependent communities in forest protection and management.

“SWOT” ANALYSIS FOR PRESCRIPTION OF STRATEGIES FOR ACHIEVING THE GOALS AND OBJECTIVES

SWOT stands for Strengths, Weaknesses, Opportunities and Threats. Strengths and Weaknesses are internal factors and Opportunities and Threats are external factors. Internal attributes are controllable to some extent. Strengths are to be pursued and weakness strategically eliminated or reduced. Considering the vastness of the factors influencing the forestry/biodiversity goals, a few factors are mentioned below in SWOT analysis:

STRENGTHS	WEAKNESSES
1. Long history of conservation and scientific management of forests. 2. Strong legislation and policy. 3. Trained and disciplined staff. 4. Scientific background of staff. 5. Rich flora and fauna. 6. Rich traditional knowledge among locals. 7. Most forest land notified as Reserve Forests. 8. Development of infrastructure in rural and remote areas, encompassing offices, residential spaces, depots, nurseries, etc. 9. Organized budget release and monitoring system. 10. Increase in funds to forestry sector over the years. 11. Well established training institutes in the department. 12. Improved staff mobility achieved by enhanced connectivity and upgraded vehicles. 13. Provision of weapons for safety.	1. Forest land scattered and adjacent to private lands. 2. Predominance of teak forests. 3. Lack of legal awareness. 4. Lack of proper maintenance of records and files, especially at range level. 5. Lack of specific research on flora and fauna. 6. Lack of data and research on NTFP species. 7. Lack of proper demarcation of forest boundaries. 8. Maintenance of infrastructure lacking at times. 9. Long gestation period of forestry activities. 10. Lack of public involvement in forest protection. 11. Deficiency in rapport and communication among stake holders. 12. Lack of viable alternatives for forest dependent communities. 13. Systemic corruption. 14. Uncertainty in budget release.

OPPORTUNITIES	THREATS
1. Many new schemes and fund sources. 2. Use of modern technology in reporting and monitoring. 3. Better coordination among various departments. 4. Documentation and biodiversity studies involving educational and research institutions. 5. Training in different facets of wildlife management. 6. Creation of assets and infrastructure through CAMPA funds. 7. Various training opportunities for all cadres of staff. 8. Better awareness among people regarding nature conservation. 9. Impetus to conservation by Government.	1. Huge gap between demand and supply of forest produce. 2. Increase in illicit felling, poaching, encroachment and grazing. 3. Added impetus to encroachment of forest lands due to Forest Rights Act, 2006. 4. Fragmentation of forests due to linear projects. 5. Increasing man- animal conflict. 6. Increase in invasive alien species. 7. Erratic rainfall and drought conditions. 8. Staff overburdened with unproductive non forestry work. 9. Lack of sustainability in community attitudes, participation and motivation. 10. Undue political interference.

EXPECTED OUTCOME

During implementation of the plan, the following are the prominent outcomes to be achieved:

- Nations' natural heritage will be conserved by preserving the extensive natural forests with the vast variety of the life forms and genetic resources.
- Forest cover will improve along with the increase in the productivity of the forests to meet the demands of local people.
- Forests shall be maintained at an optimum growing stock so as to produce maximum timber and simultaneously sequester and store maximum carbon dioxide.
- Healthy regeneration of desired species.
- Forest boundaries will be consolidated leading to better protection and management.
- Various soil conservation measures will be undertaken on watershed basis. Soil erosion and degradation of the forest area will be checked. Silt

deposition will be reduced thereby helping in increasing life of water bodies and the quality of water will improve.

- Wildlife habitats in the forest area will get improved with respect to the availability of fodder, water and shelter to the wildlife occurring in the division. This will also help in reducing man animal conflict *vis-a-vis* reduction in damage to agricultural crops, injury/death of people and domestic livestock.
- Important wetlands, in terms of wildlife conservation, shall be recorded and monitored.
- The rights and concessions of the tribal and other rural people living within and near the forests will get protected. Their domestic requirement of fuel wood, fodder and non-timber forest produce (NTFP) will be addressed.
- People will be more aware about the value of the trees, wildlife and nature in general through awareness campaign, education and extension activities.
- Biodiversity conservation will get a boost. Biodiversity Management Committees formed at the village level will be empowered to periodically upgrade biodiversity registers and play a major role in conservation of biodiversity. Documentation and studies on various aspects of biodiversity will be undertaken.
- Local Gram Sabhas will be strengthened; JFM committees formed will extend active support to the department in the protection of the forests from illicit felling, illegal grazing, unauthorized NTFP collection, forest fires etc.
- Various working plan activities that shall be undertaken will provide employment to the locals and thereby boosts the rural economy.
- Formation of Green Army, particularly in the schools, will inculcate values of the conservation in the young students and they will act as agents of positive change in our society.
- Revenue generation to the state exchequer.

ABBREVIATIONS USED

ACF	:	Assistant Conservator of Forests
AGB	:	Above Ground Biomass
AR	:	Artificial Regeneration
BA	:	Basal Area
BGB	:	Below Ground Biomass
BMC	:	Biodiversity Management Committee
CA	:	Compensatory Afforestation
CAI	:	Current Annual Increment
CAMPA	:	Compensatory Afforestation Fund Management and Planning Authority
C.B.O	:	Cut Back Operation
CCA	:	Cultivable Command Area
CCF	:	Chief Conservator of Forests
CCT	:	Continuous Contour Trench
CCTV	:	Closed-Circuit Television
CF	:	Conservator of Forests
CGWB	:	Central Ground Water Board
cm	:	Centimeter
CO ₂	:	Carbon dioxide
Compt.	:	Compartment
COVID-19	:	Coronavirus Disease
CrPC	:	Code of Criminal Procedure

CSS	:	Centrally sponsored Scheme
cum	:	Cubic Meter
CWR	:	Coppice with Reserves
CWS	:	Coppice with Standards
°C	:	Degree Celsius
DCF	:	Deputy Conservator of Forests
DFO	:	Divisional Forest Officer
DOM	:	Dead Organic Matter
DPDC	:	District Planning and Development Council
Dt.	:	Dated
EDC	:	Eco-Development Committee
EGS	:	Employment Guarantee Scheme
FCA	:	Forest Conservation Act, 1980
FDA	:	Forest Development Agency
FMD	:	Foot-and-Mouth Disease
FRA	:	Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
FDCM	:	Forest Development Corporation of Maharashtra
FG	:	Forest Guard
FIR	:	First Information Report
FIWC	:	Fodder Improvement Working Circle
FLCS	:	Forest Labourer's Co-operative Society
FS	:	Felling Series
FSI	:	Forest Survey of India
FYO	:	First Year Operation

GBH	:	Girth at Breast Height
GDP	:	Gross Domestic Product
GIS	:	Geographic Information System
GIM	:	Green India Mission
GMO	:	Genetically Modified Organism
Govt.	:	Government
Gol	:	Government of India
GoM	:	Government of Maharashtra
GPS	:	Global Positioning System
GSDA	:	Groundwater Surveys and Development Agency
ha	:	Hectare
ham	:	Hectare-meter
hrs	:	Hours
ICT	:	Information and Communication Technology
i.e.	:	That is
IFS	:	Indian Forest Service
IIFM	:	Indian Institute of Forest Management
ISFR	:	India State of Forests Report
IT	:	Information Technology
IVI	:	Importance Value Index
IV th Y.O.	:	Fourth Year Operation
IUCN	:	International Union for Conservation of Nature
IWC	:	Improvement Working Circle
JFMC	:	Joint Forest Management Committee

Km.	:	Kilometer
Kg	:	Kilogram
LAN	:	Local Area Network
LPG	:	Liquefied Petroleum Gas
LPM	:	Litres Per Minute
m	:	Meter
m ³	:	Cubic meter
MD	:	Man Day
ml	:	Milliliter
mm	:	Millimeter
Max	:	Maximum
Min	:	Minimum
MAI	:	Mean Annual Increment
MAP	:	Medicinal and Aromatic Plants
MDF	:	Moderate Dense Forests
MIS	:	Management Information System
Misc	:	Miscellaneous
MFP	:	Minor Forest Produce
MoEF	:	Ministry of Environment and Forest
MoU	:	Memorandum of Understanding
MRSAC	:	Maharashtra Remote Sensing Application Centre
MSL	:	Mean Sea Level
M.T.	:	Metric Tonne
NITI Aayog	:	National Institution for Transforming India

NR	:	Natural Regeneration
No.	:	Number
NPV	:	Net Present Value
NT	:	Nomadic Tribe
NTFP	:	Non Timber Forest Produce
NWFP	:	Non Wood Forest Produce
OF	:	Open Forests
PB	:	Periodic Block
PBR	:	People's Biodiversity Register
PCCF	:	Principal Chief Conservator of Forests
PDA	:	Personal Digital Assistant
PF	:	Protected Forest
POR	:	Preliminary Offence Report
PPO	:	Pre Planting Operation
%	:	Percentage
RCC	:	Reinforced Concrete Cement
RET	:	Rare Endangered and Threatened
RF	:	Reserved Forest
RFO	:	Range Forest Officer
Rs	:	Rupees
RTGS	:	Real Time Gross Settlement
SC	:	Scheduled Caste
SCI	:	Selection-cum-Improvement
S & M	:	Soil and Moisture

Sec.	:	Section
SHG	:	Self Help Group
SOC	:	Soil Organic Carbon
SOFR	:	Survey of Forest Resources
SOM	:	Soil Organic Matter
Sq	:	Square
SQ	:	Site Quality
Sr	:	Serial
ST	:	Schedule Tribe
SYO	:	Second Year Operation
TCM	:	Trench cum Mound
Temp	:	Temperature
TYO	:	Third Year Operation
TOF	:	Trees Outside Forests
UF	:	Un-classed Forests
U/S	:	Under section
UN WTO	:	United Nation World Trade Organization
VDF	:	Very Dense Forests
VJNT	:	Vimukta Jati and Nomadic Tribes
Vol	:	Volume
w.r.t	:	with respect to
W.C.	:	Working Circle
WP	:	Working Plan
WS	:	Working Series
Yr	:	Year

GLOSSARY OF LOCAL NAMES

Ain-i-Akbari	:	A 16th century treatise on administration of Mughal Emperor Akbar, composed by Abu'lFazl
Charaibandi	:	Ban on illegal grazing
Geru	:	Red Ochre or Red earth
Gairan	:	A place for herding cattle
Gaothan	:	A site kept reserved for housing
Gully	:	Channel
Jungle	:	Forest
Kacha road	:	Temporary road
Kharif	:	Monsoon crop
Kurhadbandhi	:	Ban on illegal felling
Murum	:	A reddish hard soil
Naka	:	Barrier on road for checking forest produce In transit
Nala	:	A water course
Nistar	:	Forest produce required for bonafide agriculture or domestic purposes
Parwana	:	License
Phadi	:	A temporary Tendu leaves collection centre
Puda	:	A bundle of 70 Tendu leaves
Ramna	:	A grass reserved close to grazing
Regur	:	Black cotton soil
Shikar	:	Hunting
Taluka	:	A revenue administrative block.

LIST OF FLORA
LOCAL AND BOTANICAL NAMES OF PLANTS IDENTIFIED IN
YAVATMAL FOREST DIVISION

A. TREES

<u>Local Name</u>	<u>Botanical Name</u>	<u>Family</u>
Achar	<i>Buchanania lanzan</i>	Anacardiaceae
Ain	<i>Terminalia alata</i>	Combretaceae
Ali/Aal/Bartondi	<i>Morinda tinctoria</i>	Rubiaceae
Amaltas/Bahawa	<i>Cassia fistula</i>	Caesalpiniaceae
Amba/Mango	<i>Mangifera indica</i>	Anacardiaceae
Amta	<i>Bauhinia malabarica</i>	Caesalpiniaceae
Anjan	<i>Hardiwickia binata</i>	Caesalpiniaceae
Apta/Kachnar	<i>Bauhinia racemosa</i>	Caesalpiniaceae
Arjuna/Kahu	<i>Terminalia arjuna</i>	Combretaceae
Arni	<i>Clerodendrum multiflorum</i>	Lamiaceae
Australian Babul	<i>Acacia auriculiformis</i>	Fabaceae
Awala	<i>Phyllanthus emblica</i>	Phyllanthaceae
Babul	<i>Acacia nilotica</i>	Mimoseae
Badam	<i>Prunus dulcis</i>	Rosaceae
Bakain / Baka neem	<i>Melia azedarach</i>	Meliaceae
Bakul	<i>Mimusops elengi</i>	Sapotaceae
Beheda	<i>Terminalia bellerica</i>	Combretaceae
Bel	<i>Aegle marmelos</i>	Rutaceae
Bhirra	<i>Chloroxylon swietenia</i>	Rutaceae
Bhokar	<i>Cordia dichotoma</i>	Cordiacea
Biba/Bhilawa	<i>Semecarpus anacardium</i>	Anacardiaceae
Bija	<i>Pterocarpus marsupium</i>	Fabaceae
Bistendu	<i>Diospyros montana</i>	Ebenaceae
Bor/Ber	<i>Zizyphus mauritiana</i>	Rhamnaceae
Chandan	<i>Santalum album</i>	Santalaceae

Chichwa	<i>Albizzia odoratissima</i>	Mimoseae
Chinch	<i>Tamarindus indica</i>	Caesalpiniaceae
Dahibaras	<i>Cordia macleodii</i>	Boraginaceae
Dhaman	<i>Grewia tilifolia</i>	Tiliaceae
Dhaora/Dhawda	<i>Anogeissus latifolia</i>	Combretaceae
Dhoban/Phansi	<i>Dalbergia paniculata</i>	Fabaceae
Ghingan	<i>Lannea coromandelica</i>	Amranghaceae
Ghoti/Ghot	<i>Zizyphus glaberrima</i>	Rhamnaceae
Gliricidia	<i>Gliricidia sepium</i>	Fabaceae
Haldu	<i>Adina cordifolia</i>	Rubiaceae
Hiwar	<i>Acacia leucophloea</i>	Mimoseae
Hirda/Harra	<i>Terminalia chebula</i>	Combretaceae
Jambhul/Jamun	<i>Syzygium cuminii</i>	Myrtaceae
Jarul	<i>Lagerstroemia Speciosa</i>	Lythraceae
Kadamb	<i>Neolamarckia cadomba</i>	Rubiaceae
Kadai	<i>Sterculia urens</i>	Malvaceae
Kanchan	<i>Bauhinia Variegata</i>	Fabaceae
Karam Mundi/ Kalamb	<i>Mitragyna parviflora</i>	Rubiaceae
Karanj	<i>Pongamia pinnata</i>	Fabaceae
Karu (Cassia)	<i>Cassia siamea</i>	Caesalpiniaceae
Kevada	<i>Pandanus odoratissimus</i>	Pandanaceae
Khair	<i>Acacia catechu</i>	Mimoseae
Khirni	<i>Manilkara hexandra</i>	Sapotaceae
Kusum	<i>Schleichera oleosa</i>	Sapindaceae
Kadhineem	<i>Murraya Koenigii</i>	Rutaceae
Kawat	<i>Limonia acidissima</i>	Rutaceae
Kulu	<i>Sterculia urens</i>	Sterculiaceae
Lendia/Lenda/schena/Asah	<i>Lagerstroemia parviflora</i>	Lythraceae
Lokhandi	<i>Ixora arborea</i>	Rubiaceae
Medsing	<i>Dolichandrone falcate</i>	Bignoniaceae
Moha/Mahuwa	<i>Madhuca longifolia</i>	Sapotaceae

Mahogany	<i>Swietenia macrophylla</i>	Meliaceae
Maharukh	<i>Ailanthus excelsa</i>	Simaroubaceae
Mokha	<i>Schrebera swietenoides</i>	Oleaceae
Moyen/Mowai	<i>Lannea coromandelica</i>	Anacardiaceae
Neem	<i>Azadirachta indica</i>	Meliaceae
Phanas	<i>Artocarpus heterophyllus</i>	Moraceae
Pipal	<i>Ficus religiosa</i>	Moraceae
Putranjiva	<i>Putranjiva roxburghii</i>	Putranjivaceae
Raktachandan	<i>Pterocarpus marsupium</i>	Fabaceae
Rakta-rohida	<i>Tecomella undulate</i>	Bignoniaceae
Ramphal	<i>Annona reticulate</i>	Fabaceae
Ratan gunj	<i>Adenanthera pavonina</i>	Fabaceae
Ratanjot	<i>Jatropha curcas</i>	Euphorbiaceae
Ritha	<i>Sapindus trifoliatus</i>	Sapindaceae
Rohan	<i>Soymida febrifuga</i>	Meliaceae
Rohini	<i>Mallotus philippensis</i>	Euphorbiaceae
Sag/Sagwan/Teak	<i>Tectona grandis</i>	Verbenaceae
Saja/Ain	<i>Terminalia alata</i>	Combretaceae
Salai	<i>Boswellia serrata</i>	Burseraceae
Samudraphal	<i>Barringtonia acutangula</i>	Lecythidaceae
Saptarni	<i>Alstonia scholaris</i>	Apocynaceae
Sawar/Shalmali	<i>Bombax ceiba</i>	Malvaceae
Shevga	<i>Moringa oleifera</i>	Moringaceae
Shiwan/Siwan	<i>Gmelina arborea</i>	Verbenaceae
Sirus(Black)	<i>Albizzia lebbek</i>	Mimoseae
Sirus(White)	<i>Albizzia procera</i>	Mimoseae
Sissoo	<i>Dalbergia sissoo</i>	Fabaceae
Sitaphal	<i>Annona squamosa</i>	Annonaceae
Tendu	<i>Diospyros melanoxylon</i>	Ebenaceae
Tiwas/Tinsa	<i>Ougeinia oojeinensis</i>	Fabaceae
Umbar	<i>Ficus racemose</i>	Moraceae
Wad	<i>Ficus benghalensis</i>	Moraceae

B. SHRUBS

<u>Local Name</u>	<u>Botanical Name</u>	<u>Family</u>
Adulsa	<i>Adhatoda vasica</i>	Acanthaceae
Anantmool	<i>Hemidesmus indicus</i>	Apocynaceae
Asvagandha	<i>Withania somnifera</i>	Solanaceae
Atibala	<i>Abutilon indicum</i>	Malvaceae
Bala	<i>Sida cordifolia</i>	Malvaceae
Bharati	<i>Gymnosporia spinosa</i>	Celasteraceae
Champa	<i>Plumeria rubra</i>	Apocynaceae
Chillari	<i>Mimosa rubicaulis</i>	Mimoseae
Chillati	<i>Caesalpinia sepiaria</i>	Caesalpiniaceae
Datura	<i>Datura metel</i>	Solanaceae
Dudhi/Kalakuda	<i>Wrightia tinctoria</i>	Apocynaceae
Dhayati	<i>Woodfordia floribunda</i>	Lythraceae
Gajkarni/Snake jasmine	<i>Rhinacanthus nasutus</i>	Acanthaceae
Ghotbor	<i>Ziziphus xylopyrus</i>	Rhamnaceae
Gokarna	<i>Barleria cristata</i>	Acanthaceae
Jamalgota	<i>Baliospermum montanum</i>	Euphorbiaceae
Jangli-methi	<i>Sida rhombifolia</i>	Malvaceae
Jasvant	<i>Hibiscus rosa-sinensis</i>	Malvaceae
Kaner	<i>Nerium oleander</i>	Apocynaceae
Kari Korando	<i>Carissa spinarium</i>	Apocynaceae
Karat	<i>Barleria prionitis</i>	Acanthaceae
Karwand	<i>Carissa carandas</i>	Apocynaceae
Kuda, Indrajav	<i>Holarrhena antidysenterica</i>	Apocynaceae
Lajkuli	<i>Mimosa pudica</i>	Fabaceae
Madang	<i>Dendrophthoe falcata</i>	Loranthaceae
Mogali yerand	<i>Jatropha curcus</i>	Euphorbiaceae
Mothi-ringani	<i>Solanum ferox</i>	Solanaceae
Muradsheng/Marorphal	<i>Helicteres isora</i>	Sterculiaceae
Nirgudi	<i>Vitex negundo</i>	Verbenaceae

Parijat	<i>Nyctanthes arbortristis</i>	Oleaceae
Rui	<i>Calotropis gigantea</i>	Apocynaceae
Sagargota	<i>Caesalpinia bonducella</i>	Fabaceae
Salaparni	<i>Desmodium gangeticum</i>	Fabaceae
Sindhi/Chhindi	<i>Phoenix sylvestris</i>	Arecaceae
Tarwar	<i>Cassia auriculata</i>	Caesalpiaceae
Waghoti	<i>Capparis horrida</i>	Capparidaceae
Vidanga	<i>Embelia ribes</i>	Moringaceae
Zingrool/Pharsa	<i>Grewia orbiculata</i>	Tiliaceae
Zizurti	<i>Sida spinosa</i>	Malvaceae

C. HERBS

<u>Local Name</u>	<u>Botanical Name</u>	<u>Family</u>
Agadha	<i>Achyranthes aspera</i>	Amaranthaceae
Akkalkara	<i>Anacyclus pyrethrum</i>	Asteraceae
Aparajita	<i>Clitoria ternatea</i>	Fabaceae
Bajradanti	<i>Tephrosia purpurea</i>	Fabaceae
Bhuiawalki	<i>Phyllanthus fraternus</i>	Euphobiaceae
Bhuriningani	<i>Solanum surattense</i>	Solanaceae
Brahmi	<i>Centella asiatica</i>	Apiaceae
Divali	<i>Tephrosia hamiltonii</i>	Fabaceae
Gajargawat	<i>Parthenium hysterophorus</i>	Asteraceae
Gokhru	<i>Tribulus terrestris</i>	Zygophyllaceae
Gorakhmundi	<i>Sphaeranthus indicus</i>	Asteraceae
Gulvel	<i>Tinospora cordifolia</i>	Menispermaceae
Hamata	<i>Stylosanthes hamata</i>	Caesalpiaceae
Kali musali	<i>Curculigo orchoides</i>	Hypoxidaceae
Kalmegh	<i>Andrographis paniculata</i>	Acanthaceae
Kangni	<i>Solanum nigrum</i>	Solanaceae
Kurmudi	<i>Tridax procumbens</i>	Asteraceae

Maka	<i>Eclipta alba</i>	Asteraceae
Patharchur	<i>Coleus aromaticus</i>	Lamiaceae
Pivla Dhotra	<i>Argemone mexicana</i>	Papaveraceae
Pivili tilwan	<i>Cleome viscosa</i>	Cleomaceae
Ran halad	<i>Curcuma zedoaria</i>	Zingiberaceae
Ran-kanda	<i>Drimia indica</i>	Asparagaceae
Rantulsi/Bantulsi	<i>Hyptis suaveolens</i>	Lamiaceae
Rantur	<i>Atylosia scarabaeoides</i>	Fabaceae
Sadafully	<i>Catharanthus roseus</i>	Apocynaceae
Safed musali	<i>Chlorophytum tuberosum</i>	Asparagaceae
Sarpagandha	<i>Rauvolfia serpentina</i>	Apocynaceae
Scabra	<i>Stylosanthes scabra</i>	Caesalpiaceae
Suran	<i>Amorphophallus paeoniifolius</i>	Araceae
Surankanda	<i>Tacca leontopetaloides</i>	Dioscoreaceae
Tarota	<i>Cassia tora</i>	Caesalpiaceae
Vacha	<i>Acorus calamus</i>	Acoraceae
Van tulsi	<i>Ocimum basilicum</i>	Lamiaceae

D. GRASSES AND BAMBOOS

<u>Local Name</u>	<u>Botanical Name</u>	<u>Family</u>
Bans/Bamboo	<i>Dendrocalamus strictus</i>	Poaceae
Bhurbhusi	<i>Eragrostis tenella</i>	Poaceae
Duswa/Haryalli/Doob	<i>Cynodon dactylon</i>	Poaceae
Dongri gavat	<i>Chrysopogon montana</i>	Poaceae
Guhar, marwel	<i>Andropogon annulatus</i>	Poaceae
Kans	<i>Saccharum spontaneum</i>	Poaceae
Khas	<i>Vetiveria zizanioides</i>	Poaceae
Kodmor	<i>Apluda varia</i>	Poaceae
Kunda	<i>Ischaemum pilosum</i>	Poaceae
Kusal	<i>Heteropogon contortus</i>	Poaceae

Lemon grass	<i>Cymbopogon citratus</i>	Poaceae
Mushan	<i>Iseilema laxum</i>	Poaceae
Musta	<i>Cyperus rotundus</i>	Cyperaceae
Paonia	<i>Schima sulcatum</i>	Poaceae
Sabai or sum	<i>Ischaemum angustifolium</i>	Poaceae
Sheda	<i>Schima nervosum</i>	Poaceae
Tikhadi/Rusa/Rosha	<i>Cymbopogon martini</i>	Poaceae

E. CLIMBERS

<u>Local Name</u>	<u>Botanical Name</u>	<u>Family</u>
Amarbel	<i>Cuscuta reflexa</i>	Convolvulaceae
Bhuikand/Baichend	<i>Dioscorea daemona</i>	Dioscoreaceae
Chilahar/Cat's claw	<i>Caesalpinia sepiaria</i>	Fabaceae
Chilati	<i>Acacia pennata</i>	Mimoseae
Chirati	<i>Mukia maderaspatana</i>	Cucurbitaceae
Dudhavel	<i>Lettsomia setosa</i>	Convolvulaceae
Dukkerkand	<i>Dioscorea bulbifera</i>	Dioscoreaceae
Eruni	<i>Zizyphus oenoplia</i>	Rhamnaceae
Gunchi/Gunj	<i>Abrus precatorius</i>	Papilionaceae
Hadjod	<i>Cissus quadrangularis</i>	Vitaceae
Kallawai	<i>Gloriossa superba</i>	Colchicaceae
Kawavel, Dudhi(Nagvel)	<i>Cryptolepis buchanani</i>	Asclepiadaceae
Khajkuri	<i>Mucuna pruriens</i>	Fabaceae
Mahulbel/Mahul	<i>Bauhinia vahlli</i>	Caesalpiniaceae
Palasvel	<i>Butea superba</i>	Fabaceae
Pan	<i>Piper betle</i>	Piperaceae
Piwarvel	<i>Combretum ovalifolium</i>	Combretaceae
Ranjai	<i>Clematis triloba</i>	Ranunculaceae
Shatova/Satawari	<i>Asparagus racemosus</i>	Liliaceae
Vasan vel	<i>Cocculus hirsutus</i>	Menispermaceae

LIST OF FAUNA

COMMON AND ZOOLOGICAL NAMES OF WILD ANIMALS AND BIRDS

A. CHECK LIST OF CARNIVORES

Sr.No.	Common Name	Scientific Name
1	Indian jackal	<i>Canis aureus indicus</i>
2	Indian fox	<i>Vulpes bengalensis</i>
3	Indian grey mongoose	<i>Urva edwardsii</i>
4	Indian wolf	<i>Canis lupus pallipes</i>
5	Jungle cat	<i>Felis chaus</i>
6	Leopard/Panther	<i>Panthera pardus</i>
7	Striped hyaena	<i>Hyaena hyaena</i>
8	Tiger	<i>Panthera tigris</i>
9	Wild dog /Dhole	<i>Cuon alpinus</i>

B. CHECK LIST OF HERBIVORES

Sr.No.	Common Name	Scientific Name
1	Barking deer	<i>Muntiacus muntjac</i>
2	Black buck	<i>Antilope cervicapra</i>
3	Blue bull	<i>Boselaps traqocamelus</i>
4	Chausingha	<i>Tetracerus quadricornis</i>
5	Chinkara	<i>Gazella bennettii</i>
6	Common langur	<i>Presbytis pileatus</i>
7	Gray langur	<i>Presbystis entellus</i>
8	Porcupine	<i>Hystrix indica</i>
9	Sambar deer	<i>Rusa unicolor</i>
10	Sloth bear	<i>Melursus ursinus</i>
11	Small Indian civet	<i>Viverricula indica</i>
12	Spotted deer	<i>Axis axis</i>
13	Wild pig	<i>Sus scrofa</i>
14	Indian pangolin	<i>Manis crassicaudata</i>

C. CHECK LIST OF AVIFAUNA

Sr.No.	Common Name	Scientific Name
1	Alexandrine parakeet	<i>Psittacula eupatria</i>
2	Alpine swift	<i>Tachymarptis melba</i>
3	Asian koel	<i>Eudynamys scolopacea</i>
4	Asian palm swift	<i>Cypsiurus balasiensis</i>
5	Baillon's crane	<i>Porzana pusilla</i>
6	Bar-headed goose	<i>Anser indicus</i>
7	Barred buttonquail	<i>Tumix suscitator</i>
8	Black-rumped flameback	<i>Dinopium benghalense</i>
9	Black-tailed godwit	<i>Limosa limosa</i>
10	Blue-tailed bee-eater	<i>Merops philippinus</i>
11	Blue-cheek bee-eater	<i>Merops persicus</i>
12	Brown crane	<i>Amaurornis akool</i>
13	Brown fish owl	<i>Ketupa zeylonensis</i>
14	Brown hawk owl	<i>Ninox scutulata</i>
15	Brown-capped pygmy woodpecker	<i>Dendrocopos nanus</i>
16	Chestnut-bellied sandgrouse	<i>Pterocles exustus</i>
17	Comb duck	<i>Sarkidiornis melanotos</i>
18	Common barn owl	<i>Tyto alba</i>
19	Common coot	<i>Fulica atra</i>
20	Common greenshank	<i>Tringa nebularia</i>
21	Common hawk cuckoo	<i>Hierococcyx varius</i>
22	Common hoopoe	<i>Upupa epops</i>
23	Common kingfisher	<i>Alcedo atthis</i>
24	Common moorhen	<i>Gallinule chloropus</i>
25	Common pochard	<i>Aythya farina</i>
26	Common quail	<i>Cotumix cotumix</i>
27	Common redshank	<i>Tringa totaus</i>

Sr.No.	Common Name	Scientific Name
28	Common sandpiper	<i>Actitis hypoleucos</i>
29	Common shelduck	<i>Tadorna tadorna</i>
30	Common snipe	<i>Limnocyrtus minimus</i>
31	Common teal	<i>Anas crecca</i>
32	Coppersmith barbet	<i>Megalaima huemacephala</i>
33	Cotton pygmy – goose	<i>Nettapus coromandelianus</i>
34	Crested tree swift	<i>Hemiprocne coronate</i>
35	Curlew sandpiper	<i>Calidris ferruginea</i>
36	Dunlin	<i>Calidris alpina</i>
37	Eurasian collared dove	<i>Streptopelia decaocto</i>
38	Eurasian cuckoo	<i>Cuculus canorus</i>
39	Eurasian curlew	<i>Numenius orauata</i>
40	Eurasian whimbrel	<i>Numenius phaeotus</i>
41	Eurasian wigeon	<i>Anas Penelope</i>
42	Eurasian wryneck	<i>Jynx torquilla</i>
43	European roller	<i>Coracias garrulous</i>
44	Ferruginous pochard	<i>Aythya nyroca</i>
45	Gadwall	<i>Anas strepera</i>
46	Garganey	<i>Anas querquedula</i>
47	Greater painted snipe	<i>Rostratula benghalensis</i>
48	Green bee eater	<i>Merops orientalis</i>
49	Green sandpiper	<i>Tringa ochropus</i>
50	Grey – bellied cuckoo	<i>Cacomantis passerines</i>
51	Grey francolin	<i>Francolinus pondicerianus</i>
52	Grey jungle fowl	<i>Gallus sonneratti</i>
53	Grey nightjar	<i>Caprimulgus indicus</i>
54	Grey-lag goose	<i>Anser anser</i>
55	Indian cuckoo	<i>Cuculus micropterus</i>

Sr.No.	Common Name	Scientific Name
56	Indian grey hornbill	<i>Ocyrceros birostris</i>
57	Indian nightjar	<i>Caprimulgus asiaticus</i>
58	Indian peafowl	<i>Pavo criststus</i>
59	Indian roller	<i>Coracias benghalensis</i>
60	Indian scops owl	<i>Otus bakkamoena</i>
61	Jack snipe	<i>Gallinago gallinago</i>
62	Jungle bush quail	<i>Perdica asiatica</i>
63	Jungle owlet	<i>Glaucidium radiatum</i>
64	Laughing dove	<i>Streptopelia senegalensis</i>
65	Lesser whistling duck	<i>Dendrocygna javanica</i>
66	Little stint	<i>Calidris minuta</i>
67	Little swift	<i>Apus affinis</i>
68	Mallard	<i>Anas platyrhynchos</i>
69	Marsh sandpiper	<i>Tringa stagnatilis</i>
70	Mottled wood owl	<i>Strix leptooogrammica</i>
71	Northern pintail	<i>Anas acuta</i>
72	Northern shoveler	<i>Anas clypeata</i>
73	Orange breasted pigeon	<i>Treron bicinctus</i>
74	Oriental turtle dove	<i>Streptopelia orientalis</i>
75	Painted francolin	<i>Francolinus pictus</i>
76	Painted sandgrouse	<i>Pterocles indicus</i>
77	Pheasant tailed jacana	<i>Hydrophasianus chirurgus</i>
78	Pied avocet	<i>Recurvisrostra avosetta</i>
79	Pied cuckoo	<i>Clamator jacobinus</i>
80	Pied kingfisher	<i>Ceryle rudis</i>
81	Pin tailed snipe	<i>Gallinago stenura</i>
82	Plum – headed parakeet	<i>Psittacula cyanocephala</i>
83	Purple swamphen	<i>Porphyrio porphyria</i>

Sr.No.	Common Name	Scientific Name
84	Rain quail	<i>Cotumix coromandelica</i>
85	Red – crested pochard	<i>Rhodonessa rufina</i>
86	Red collared dove	<i>Streptopelia tranquebarica</i>
87	Red jungle fowl	<i>Gallus gallus</i>
88	Red necked phalarope	<i>Phalaropes lobatus</i>
89	Rock bush quail	<i>Perdicula argoondah</i>
90	Rock eagle owl	<i>Bo bengalensis</i>
91	Rock pigeon	<i>Columba livia</i>
92	Rose ringed parakeet	<i>Psittacula krameri</i>
93	Ruddy shelduck	<i>Tadorma ferruginea</i>
94	Ruff	<i>Philomachus pugnax</i>
95	Savannah nightjar	<i>Caprimulgus affinis</i>
96	Short eared owl	<i>Asio flammeus</i>
97	Sirkeer malkoha	<i>Taccocua</i>
98	Southern coucal	<i>Centropus coucal</i>
99	Spot – billed duck	<i>Anas poecilorhyncha</i>
100	Spotted dove	<i>Streptopelia chinensis</i>
101	Spotted owlet	<i>Athene brama</i>
102	Spotted redshank	<i>Tringa erythropus</i>
103	Stork billed kingfisher	<i>Halcyon capensis</i>
104	Temminck’s stint	<i>Calidris temminckii</i>
105	Terek sandpiper	<i>Xenus cinerus</i>
106	Tufted duck	<i>Aythya fuligula</i>
107	White – naped woodpecker	<i>Chrysocolaptes festivus</i>
108	White breasted waterhen	<i>Amaurornis phoenicurus</i>
109	White throated kingfisher	<i>Halcyon smyrnensis</i>
110	Wood sandpiper	<i>Tringa glareola</i>
111	Yellow legged button quail	<i>Turnix tanki</i>
112	Yellow-crowned woodpecker	<i>Dendrocopos mahrattensis</i>
113	Yellow-footed green pigeon	<i>Treron phoenicoptera</i>

D. CHECK LIST OF AMPHIBIANS AND REPTILES

Sr.No.	Common Name	Scientific Name
1	Asian common toad	<i>Duttaphrynus melanostictus</i>
2	Asian grass frog	<i>Fejervarya limnocharis</i>
3	Asian house gecko	<i>Hemidactylus frenatus</i>
4	Asian ornate frog	<i>Microhyla fissipes</i>
5	Asian painted frog	<i>Kaloula pulchra</i>
6	Banded kukri snake	<i>Oligodon arnensis</i>
7	Banded racer	<i>Argyrogena fasciolata</i>
8	Banded racer	<i>Argyrogena fasciolata</i>
9	Blanford's rock agama	<i>Psammophilus blanfordanus</i>
10	Brahminy worm snake	<i>Indotyphlops braminus</i>
11	Bronze grass skink	<i>Eutropis macularia</i>
12	Bronzeback tree snake	<i>Dendrelaphis tristis</i>
13	Brook's house gecko	<i>Hemidactylus brookii</i>
14	Buff striped keelback	<i>Amphiesma stolatum</i>
15	Buffstriped keel-back	<i>Natrix stolata</i>
16	Cat snake	<i>Boiga trigonta</i>
17	Checkered keel-back	<i>Xenochrophis piscator</i>
18	Common Indian krait	<i>Bungarus caeruleus</i>
19	Common Indian trinket snake	<i>Elaphe Helena</i>
20	Common rat snake	<i>Ptyas mucosus</i>
21	Common sand boa	<i>Gongylophis conicus</i>
22	Common wolf snake	<i>Lycodon aulicus</i>
23	Coral snake	<i>Calliophis melanurus</i>
24	Forest spotted gecko	<i>Cyrtodactylus speciosus</i>
25	Fungoid frog	<i>Hylarana malabarica</i>
26	Green keel-back	<i>Macropisthodon plumbicolor</i>
27	Indian bullfrog	<i>Hoplobatrachus tigerinus</i>
28	Indian burrowing frog	<i>Sphaerotheca breviceps</i>

Sr.No.	Common Name	Scientific Name
29	Indian cobra	<i>Naja naja</i>
30	Indian egg eater	<i>Elachistodon westermanni</i>
31	Indian egg-eater snake	<i>Elachistodon westernmann</i>
32	Indian forest lizard	<i>Calotes nemoricola</i>
33	Indian green frog	<i>Euphlyctis hexadactylus</i>
34	Indian marbled toad	<i>Duttaphrynus stomaticus</i>
35	Indian rock python	<i>Python molurus</i>
36	Indian smooth snake	<i>Coronella brachyura</i>
37	Indian tree frog	<i>Polypedates maculatus</i>
38	Red sand boa	<i>Eryx johini</i>
39	Russell's viper	<i>Vipera russelli</i>
40	Saw-scaled viper	<i>Echis carinatus</i>
41	Stout Sand Snake	<i>Psammophis longifrons</i>
42	Variegated or Russell's kukri snake	<i>Oligodon Taeniolatus</i>
43	Worm or Blind snake	<i>Ramphotyphlops braminus</i>
44	Yellow spotted wolf snake	<i>Lycodon flavomaculatus</i>

E. CHECK LIST OF FISH DIVERSITY

Sr.No.	Common Name	Scientific Name
1	Asian stinging catfish	<i>Heteropneusters fossilis</i>
2	Bata	<i>Labeo bata</i>
3	Bogabata	<i>Labeo boga</i>
4	Bronze featherback	<i>Notopterus kaporat</i>
5	Bronze featherback	<i>Notopterus notopterus</i>
6	Butter catfish	<i>Ompak bimaculatus</i>
7	Catloa	<i>Catla catla</i>
8	Climbing perch	<i>Anabas testudineus</i>
9	Common carp	<i>Cyprinus carpio</i>
10	Dwarf snakehead	<i>Ophiocephalus gachua</i>

Sr.No.	Common Name	Scientific Name
11	Elongate glassy perchlet	<i>Channa nama</i>
12	Freshwater garfish	<i>Xenentodon cancila</i>
13	Gangetic mystus	<i>Mystus cavasius</i>
14	Giant murrel	<i>Ophiocephalus marulius</i>
15	Giant murrel	<i>Channa marulius</i>
16	Giant river catfish	<i>Mystus seenghala</i>
17	Helicopter catfish	<i>Wallago attu</i>
18	Indian spiny eel	<i>Macrogathus pancalus</i>
19	Korang	<i>Barilius bendelisis</i>
20	Long-souted barb	<i>Puntitus dorsalis</i>
21	Migral carp	<i>Cirrinus mrigala</i>
22	Mottled eel	<i>Anguilla bengalensis</i>
23	Mozambique tilapia	<i>Tilapia mossambica</i>
24	Rohu	<i>Labeo rohita</i>
25	Spotted snakehead	<i>Channa punctatus</i>
26	Swamp barb	<i>Puntitus chola</i>
27	Tank goby	<i>Glossogobius giuris</i>
28	Ticto barb	<i>Barbacus ticto</i>
29	Walking catfish	<i>Clarius batrachus</i>
30	Zig-zag eel	<i>Mastocembelus armatus</i>

PART - I

**SUMMARY OF FACTS ON WHICH
PROPOSALS ARE MADE**

CHAPTER – 1

THE TRACT DEALT WITH

1.1 NAME AND SITUATION

Yavatmal Forest Division is one of the four forest divisions in Yavatmal Circle, situated at the center of Yavatmal District of Maharashtra. The district is known as Yavatmal after its headquarters. As per *Ain-i-Akbari*, Yavatmal's name originated from 'Yot Lohara', with "Yot" being an Urdu variation of the original name "Yavata" for the town, and "Lohara" being the name of another village situated approximately 5 km to the west. After the amalgamation of the village Lohara into the town, it became known as Yavatmal, combining "Yavat" (the original town name) and "Mal" (a distortion of Mahal or Pargana town). Another possibility is that it derived from the Marathi word "Mali," meaning a plain, suggesting that the town was recognized as the plains of Yavat or Yavat plains, hence Yavatmal.

EVOLUTION OF THE DISTRICT: Yavatmal has evolved by grouping together parts of the East Berar and Basim (now Akola district) districts. The tahsils of Yeotmal, Darwha, Kelapur and Wun (or Wani as it has been renamed) of the East Berar district were separated and grouped to form a new district in the year 1864. This district was originally named the South-East Berar and subsequently Wun district. In the year 1905, the tahsil of Pusad was transferred from the Basim district to the Wun district and simultaneously the Wun district was renamed as Yeotmal district. With the reorganization of States in 1956, the district was transferred from Madhya Pradesh to the then Bombay State. The district has been a part of Maharashtra since May 1, 1960.

EVOLUTION OF THE FOREST DIVISION: In the year 1964 the old Yavatmal Forest Division was reorganized into two separate forest divisions i.e. East Yavatmal and West Yavatmal Forest Divisions. Subsequently in the year 1983 reorganization of Forest Department was effected and three Forest Divisions were created namely

Yavatmal Forest Division, Pusad Forest Division and Wani Forest Division (later on renamed as Pandharkawada Forest Division) out of East Yavatmal and West Yavatmal Forest Divisions. Area of the division lies in Yavatmal, Kalamb, Arni, Ner, Darwha and Babulgaon talukas of Yavatmal District. The district headquarters and the division headquarters are located at Yavatmal.

The total geographical area of the division is 4,77,920.43 ha and the gross forest area is 95,523.22 ha which is 20 %. The total forest area of Yavatmal Division is 83,534.61 ha. out of which 80781.16 ha. is reserved forest, 308.41 ha. is protected forest and 2445.03 ha. is unclassified forests. A total of 83,534.61 ha shall be dealt in this working plan. The compartment wise details are given in **Appendix No. I.** The Yavatmal Forest Division lies between the longitudes 77°34'9" to 78°30'52" East and latitudes 19°53'58" to 20°41'46" North.



BOUNDARIES: The boundaries of the division are as follows

North	:	Dhamangaon taluka of Amravati district
North -East	:	Deoli taluka of Wardha district
East	:	Ralegaon taluka of Yavatmal district
South-East	:	Ghatanji taluka of Yavatmal district
South	:	Kinwat taluka of Nanded district
South -West	:	Digras taluka of Yavatmal district
West	:	Karanja taluka of Washim district.
North -West	:	Nandgaon-Khandeshwar taluka of Amravati district

1.1.1 DEMOGRAPHIC DETAILS

According to the 2011 Census, Yavatmal district had a population of 27,72,348. The district had a population density of 204 inhabitants per square kilometre. Its population growth rate over the decade 2001-2011 was 12.9%. 21.58% of the population lived in urban areas. Scheduled Castes and Scheduled

Tribes make up 11.8% and 18.54% of the population respectively. Demographic details of six talukas pertaining to Yavatmal division are tabulated below:

TABLE NO. 1.1: POPULATION, LITERACY AND SEX RATIO OF TALUKAS IN YAVATMAL FOREST DIVISION

Sr. No.	Taluka	No. of villages	Population	Population density (per sq. km)	Rural Population	SC Population (%)	ST Population (%)	Literacy rate	Sex ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Arni	105	161833	190	161833	9.50	17.30	0.80	956
2	Babhulgaon	107	88173	154	88173	13.50	19.20	85.52	954
3	Darwha	129	191103	217	157009	13.10	8.10	84.03	945
4	Kalamb	126	103024	137	103024	10.50	30.90	82.03	964
5	Ner	88	120232	172	90930	18.60	6.80	86.12	958
6	Yavatmal	125	382965	343	145347	13.50	17.10	88.48	966

1.2 CONFIGURATION OF THE GROUND

Yavatmal Forest Division is situated on the southern up-lands of Payanghat of Berar and on the eastern portion of Ajanta hills. The tract as a whole belongs to Ajanta range with plateau on its top. Yavatmal town is situated at an elevation of 434.72 m. MSL. Most of the land of the division is high level plateau and gently slopes towards the eastern portion. The part of Yavatmal, Babhulgaon and Kalamb lie in Payanghat plains of Wardha valley. Yavatmal is the headquarters of Yavatmal district. The highest point in this area is situated in Chousala compartment No.468 having an altitude of 495.69 m. above MSL.

1.2.1 DRAINAGE

In this division, the Painganga and its tributaries Pus, Arunavati, Adan and Waghadi along with the river Wardha with its tributaries Bembla and Nirguda drains the area. Painganga and Wardha flow throughout the year.

**TABLE NO. 1.2: TALUKA WISE IRRIGATION PROJECTS IN YAVATMAL FOREST
DIVISION**

Sr. No	Taluka	Project size	Project Name
(1)	(2)	(3)	(4)
1.	Babhulgaon	Major	Bembala
		Minor	Takali
			Kapra
			Zola
2.	Kalamb	Minor	Durug
			Ghoti
			Dattapur
			Rajur
3.	Ner	Medium	Goki
		Minor	Umarda
			Jamwadi
			Singandoh
			Lohatwadi
			Ner
4.	Yavatmal	Medium	Borgaon
		Minor	Arjuna
			Kharad
			Ghatana
			Dudhana
5.	Darwaha	Minor	Kumbharkinh
			Hatola
6.	Arni	Minor	Arunavati

Projects which have a Cultivable Command Area (CCA) of more than 10,000 hectare are termed as Major Projects, those which have a CCA of less than 10,000 hectare but more than 2,000 hectare are termed as Medium projects and those Irrigation Projects which have a CCA of 2,000 hectare or less are known as Minor projects.

1.3 GEOLOGY, ROCK AND SOIL

The forests are situated on Deccan trap, with greatly varying basalts. The Archaen rocks are totally covered by Puranic rocks. The prevailing rock is basalt and these formations vary from homogeneous hard belts to soft and earthy belt. The soft belts are common and patches of black sheet rocks are frequently found. As a result of disintegration of basalt different types of soil are formed with considerable variation in depth and physical properties. Soil produced out of common variety basalt vary from sand and clay looms to hard reddish murum, which is frequently found mixed with boulders of various sizes. The soil formed out of all mentioned processes often blends with each other in varying proportions and are found containing sand lime and gravel in addition to soil. Medium black soil and mixed black soil are the two broad varieties noticed in this division.

1.4 CLIMATIC PARAMETERS

The climate of the division is characterized by a hot summer and general dryness throughout the year except during the south-west monsoon season, i.e., June to September. The temperature rises rapidly from February till May, which is the hottest month of the year. The average daily maximum temperature during May is 42.09°C and the average daily minimum temperature during December is 13.86°C.

The average annual rainfall varies from 805 mm to 948 mm and it increases from NW to SE direction. 90% of annual rainfall is received during the months of monsoon.

The rainfall received in this area is harvested in dams, tanks and wells and this water is then utilized for agriculture, drinking and other purposes. The dams are connected through canal network to the area of utilization, by lifting water from tanks and wells with the help of both electric and diesel pumps.

TABLE NO. 1.3: AVERAGE MINIMUM AND MAXIMUM TEMPERATURE

Year	Station	January		February		March		April		May		June	
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2012	Yavatmal	28.60	13.30	32.00	16.00	36.60	19.50	40.10	25.40	41.60	27.20	35.80	23.90
2013		28.90	12.00	31.00	14.30	36.00	17.30	39.20	21.20	42.60	25.70	31.90	20.00
2014		28.40	14.50	30.60	15.20	22.90	18.30	39.30	23.40	40.60	26.10	38.50	26.00
2015		27.00	12.40	31.90	15.90	32.50	18.20	37.30	22.70	41.90	26.50	35.20	24.10
2016		30.70	14.60	34.40	19.30	37.40	21.60	41.80	25.60	41.20	27.20	36.40	25.00
2017		29.80	13.90	33.60	17.20	36.60	21.40	41.40	25.00	42.50	28.90	36.00	24.30
2018		30.70	13.90	32.40	17.80	37.20	21.50	41.20	25.70	43.60	29.40	35.20	23.10
2019		29.00	12.30	32.70	17.20	37.50	21.20	41.70	25.20	43.20	28.90	39.80	26.00
2020		27.10	14.90	30.30	17.50	37.50	21.20	39.10	25.10	42.80	27.20	34.40	24.10
2021		32.20	15.50	33.10	20.60	37.70	20.10	41.20	0.00	40.70	0.00	33.70	23.80
2022		28.10	13.70	31.80	15.40	38.10	21.30	42.30	25.60	42.30	26.60	38.00	25.10
Average		29.14	13.73	32.16	16.95	35.45	20.15	40.42	22.26	42.09	24.88	35.90	24.13

Year	Station	July		August		September		October		November		December	
		Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2012	Yavatmal	28.70	20.50	28.00	20.00	30.10	20.00	31.80	16.70	29.90	13.20	30.40	12.30
2013		27.50	20.40	27.10	20.90	30.60	22.40	30.20	21.10	29.10	15.10	28.50	12.80
2014		31.30	22.70	37.80	27.70	29.70	20.70	32.30	19.50	31.40	16.30	27.70	11.70
2015		32.20	23.00	29.20	21.60	31.40	22.00	33.50	21.20	32.40	18.30	30.80	15.50
2016		29.10	22.50	29.50	22.50	29.70	21.70	31.10	18.20	30.90	12.90	29.50	12.80
2017		30.50	22.60	30.20	22.50	32.50	22.50	33.30	19.80	32.00	15.10	30.70	14.60
2018		28.30	22.00	28.10	21.20	32.20	21.10	46.20	19.10	33.60	15.90	28.50	12.80
2019		31.50	23.20	28.80	22.20	30.00	21.60	30.20	20.30	30.00	21.60	27.60	16.20
2020		32.20	23.10	29.70	22.50	31.80	22.10	32.20	20.10	31.80	15.20	31.30	13.90
2021		31.60	22.30	25.80	25.20	29.20	21.40	31.60	19.60	30.90	17.70	29.20	14.10
2022		29.30	22.50	31.50	22.30	31.80	21.80	32.10	18.70	31.40	13.20	30.90	15.80
Average		30.20	22.25	29.61	22.60	30.82	21.57	33.14	19.48	31.22	15.86	29.55	13.86

**TABLE NO. 1.4 : ANNUAL RAINFALL DATA OF VARIOUS TALUKAS OF YAVATMAL
FOREST DIVISION (2013 – 2022) (MM)**

Year	Yavatmal	Arni	Ner	Darwha	Kalamb	Babhulgaon
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2013	1068	1746	978	819	874	945
2014	518	451	520	581	643	602
2015	526	645	603	550	506	497
2016	634	903	821	754	673	725
2017	405	518	507	440	361	545
2018	869	1053	821	894	861	863
2019	809	942	980	742	814	902
2020	825	821	1013	911	961	898
2021	1105	1136	1160	1212	1259	1179
2022	1202	1564	1088	1024	1287	1184

CHAPTER 2

MAINTENANCE / INCREASE IN THE EXTENT OF FOREST AND TREE COVER

2.1 AREA OF FOREST UNDER DIFFERENT LEGAL CLASSES (RF, PF, UF AND OTHERS)

The Reserve Forests have been declared from time to time out of the changes of Government land by notifications or occasionally through acquisition under Land Acquisition Act. For the first time in 1871 the State forests were promulgated by the Forest Rules of 1871 which effected demarcation of Reserved Forests at that time. In 1892 under Berar Forest Law, State forests have been notified from time to time. Forest was notified again in detail in 1911, when Indian Forest Act was applied to Berar State and also the constitution of State forest under the Berar Forests Law was confirmed by issuing a general notification. Since then the changes in area or classification are notified under the Indian Forest Act.

There are basically two kinds of forests in the division namely Reserved Forests as declared under Indian Forest Act and Ex-private forests. The Reserved Forests are divided into 'A' and 'C' class according to the principles of forest management. In 'A' class Reserve Forest, the rules of fire protection are strict, closed for grazing and felling was regulated. However, in 'C' class Reserve Forests, rules for fire protection, grazing are not enforced but regulated with few restrictions on felling. However, this differentiation has blurred over time. The Ex-private forests were taken by Forest department for management but not declared either as Protected Forests or Reserved Forests and the Indian Forest Act was not applicable to these areas. The private forests were completely vested with the Government with the effect of abolition of Corporate Act, 1951 and were taken over by the Revenue Department. The Revenue Department utilized the excess areas for various purposes of villages under the recommendations of nistar officer Yavatmal and they

have been subsequently taken over by Forest department. Later on these areas were declared as Reserve Forest under Indian Forest Act, 1927.

The Area Statement during the Rao's Plan is as follows

The total geographical area of the division: 5,74,847 ha

Gross forest area in Yavatmal Forest Division: 95,152.30 ha

Forest area transferred to FDCM Ltd : 10,548.08 ha

Forest area remaining with Yavatmal Forest Division : 84,604.22 ha

As per Revenue & Forest GR No.TRS-06/2001/P.K.209/F-6 Dated 08/05/2003 & PCCF (HoFF) Maharashtra office letter No./ desk-7/ Estd-1/R. SR-139/ Reorg.Ytl/ (05-06)/ 140 (2013-14) dated 09/05/2013, reorganization of Yavatmal Forest Division was carried out, where forest land was exchanged with the neighbouring divisions of Pusad and Pandharkawada.

Current Detailed Area Statement is as Follows

1. Total geographical area (after re-organization in : 4,77,920.43 ha.
2013)
2. Gross Forest Area : 95,523.22 ha.
3. Area currently under FDCM's control : 10,123.83 ha.
4. Area handed over to other departments, but not : 1,864.78 ha.
notified as disforested land
5. Area dealt in Rao's Plan : 84,604.22 ha.
6. Area received during Rao's Plan (2012-2022):
 - a. From Pusad Division : 730.70 ha
 - b. From Pandharkawada Division : 301.12 ha
 - c. From FDCM : 942.86 ha.
 - d. From Compensatory Afforestation : 104.61ha.
 - e. From Revenue Department : 3758.57 ha

7. Area handed over during Rao's Plan (2012-2022)
- a. To Pusad division (2014-15) : 873.62 ha.
 - b. To Pandharkawada division (2014-15) : 889.37 ha.
 - c. To FDCM (2014-15) : 959.69 ha.
8. Total Area dealt in this working plan : 83,534.61ha.

The total forest area of Yavatmal Division as on date is 83,534.61 ha. out of which 80781.17ha. is reserved forests. 308.41 ha. is protected forests and 2445.03 ha. is unclassified forests. A total of 83,534.61 ha shall be dealt in this working plan. The details of the notification are mentioned in **Appendix No.III**. The land acquired for compensatory afforestation remained as Un-classed Forest which needs to be proposed for declaration as Reserved Forest. The area details are summarized in the table given below.



TABLE NO. 2.1: RANGEWISE DISTRIBUTION OF THE FOREST AREA (HA)

Sr. No.	Range	No. of Compts.	RF (ha)	PF (ha)	UF (ha)	Total Area (ha.) (4+5+6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Yavatmal	73	8852.93	10.85	38.63	8902.41
2	Hiwari	51	11511.7	0	24.74	11536.44
3	Wadgaon	38	6902.2	0	458.79	7360.99
4	Jodmoha	85	11596.38	297.56	1476.92	13370.86
5	Ner	83	7122.07	0	57.99	7180.06
6	Darwha	186	15059.13	0	174.77	15233.9
7	North Arni	51	10656.38	0	121.4	10777.78
8	South Arni	36	9080.38	0	91.79	9172.17
	Total	603	80781.17	308.41	2445.03	83534.61

Details of 10123.83 ha area under FDCM's control are provided in **Appendix No.I (A)**.



2.1.2 ADMINISTRATIVE UNITS

For administrative convenience, Yavatmal Forest Division has been divided into 8 ranges, 32 rounds and 126 beats. Details are given below:

TABLE NO. 2.2: ADMINISTRATIVE-UNIT WISE DISTRIBUTION OF FOREST AREA(HA)

Sr. No.	Range	Head Quarters	No of Rounds	No of Beats	Average forest area		
					Range	Round (6/4)	Beat (6/5)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Yavatmal	Yavatmal	4	18	8902.41	2225.60	494.58
2	Hiwari	Hiwari	5	18	11536.44	2307.29	640.91
3	Wadgaon	Wadgaon	4	20	7360.99	2453.66	613.42
4	Jodmoha	Jodmoha	3	12	13370.86	3342.72	668.54
5	Ner	Ner	5	18	7180.06	1795.02	598.34
6	Darwha	Darwha	3	13	15233.90	3808.48	1015.59
7	North Arni	Arni	4	15	10777.78	2155.56	598.77
8	South Arni	Sawali	4	12	9172.17	3057.39	705.55
Total			32	126	83534.61	2610.46	662.97

2.2 FOREST AREA UNDER DIFFERENT WORKING CIRCLES

The area under different working circles during implementation of G. R. K. Rao's working plan for the period 2012-13 to 2021-22 is given in the following table:

TABLE NO. 2.3: AREA ALLOCATION TO DIFFERENT WORKING CIRCLES UNDER PREVIOUS PLAN

Sr. No.	Working Circle	No. of Comp.	Area Allotted in (ha)	Percentage Area Allotted	No. of Felling Series
(1)	(2)	(3)	(4)	(5)	(6)
1	Selection cum Improvement WC	69	44825	53%	28
2	Improvement WC	188	10103	12%	6
3	Afforestation WC	36	22326	26%	14
4	Fodder Improvement WC	63	7350	9%	5
Total :		449	84604	100%	54

The area proposed under the different working circles in Yavatmal Division during implementation of this working plan is given in the following table:

TABLE NO. 2.4: AREA ALLOCATION TO DIFFERENT WORKING CIRCLES

Sr. No.	Working Circle	No. of Compt.	Area allotted in (ha)	Percentage Area allotted
(1)	(2)	(3)	(4)	(5)
1	Selection cum Improvement WC	143	41926.46	50 %
2	Improvement WC	88	10975	13 %
3	Afforestation WC	227	16919.23	20 %
4	Fodder Improvement WC	110	12472.43	15 %
5	Miscellaneous WC	35	1241.49	1 %
	Total	603	83534.61	100 %

Similarly, range-wise allocation of area proposed under different working circles is shown in the table below:

TABLE NO.2.5: RANGE-WISE AREA ALLOCATION TO DIFFERENT WORKING CIRCLES

Sr. No.	Range	SCI WC	IWC	AWC	FIWC	MISC	TOTAL (3+4+5+6+7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Yavatmal	3856.54	1893.72	2525.79	626.36	0	8902.41
2	Hiwari	9755.33	935.31	845.8	0	0	11536.44
3	Wadgaon	6201.33	434.48	511.16	0	214.02	7360.99
4	Jodmoha	7312.14	1622.26	2158.32	2278.14	0	13370.86
5	Ner	311.02	693.25	2969.01	3196.15	10.63	7180.06
6	Darwha	77.03	2043.53	5849.54	6311.42	952.38	15233.9
7	North Arni	5468.11	3237.12	2008.09	0	64.46	10777.78
8	South Arni	8944.96	115.33	51.52	60.36	0	9172.17
	Total	41926.46	10975	16919.23	12472.43	1241.49	83534.61

2.3 PERCENTAGE OF FOREST WITH SECURED BOUNDARIES

STATE OF BOUNDARIES:

The boundaries are maintained under the 1/5th boundary demarcation scheme. The existing cairns are not properly maintained and the boundary maintenance has to be improved. The boundary demarcation of forests adjoining private lands is a matter of concern. The demarcation of Reserved Forests is well maintained as compared to the demarcation of Protected and Un-classed forests. In some of the forest area, survey and demarcation was carried out to the extent of 901 km and 17,500 precast pillars were erected under Survey and Demarcation WC during Yadav's Plan. The remaining forest area and private land boundaries need to be demarcated on the ground.

The entire forest and private lands need to be demarcated thoroughly and pre-cast pillars shall be erected expeditiously and maintain regularly. Appropriate demarcation, maintenance and regular vigilance have become inevitable in the recent times because of the increasing encroachment and hike in land value

A statement showing the extent of natural and artificial boundaries is given in **Appendix No. XXXI**.



2.4 LAND USE, LAND USE CHANGE AND FORESTRY (LULUCF)

The condition of the forests and the changes in forest cover from 2016 to 2020 is shown below:

TABLE NO. 2.6: FOREST COVER CHANGE

Forest Density Class	Area in Ha.				% Change (5/2*100)
	2016	2018	2020	Change w.r.t. to 2016 (4-2)	
(1)	(2)	(3)	(4)	(5)	(6)
VDF	133.83	172.09	193.32	59.49	44 %
MDF	21198.3	21892.7	23752.66	2554.32	12 %

Forest Density Class	Area in Ha.				% Change (5/2*100)
	2016	2018	2020	Change w.r.t. to 2016 (4-2)	
(1)	(2)	(3)	(4)	(5)	(6)
OF	34337	36048.4	32273.52	-2063.48	-6 %
Scrub	3022.29	2847.16	3181.73	159.44	5 %
No Vegetation	21512.3	19345.2	20889.22	-623.10	-3 %
Water	863.35	761.55	776.68	-86.67	-10 %
Other	2467.51	2467.51	2467.51	0	0
Total	83534.61	83534.61	83534.61	0	0

There has been a substantial enhancement in the area of VDF with 44 % increase. Similarly, the MDF have seen a considerable increase of 12 % whereas the OF and No Vegetation area have reduced by 6 % and 3% respectively. However, an increase in Scrub forests by 5 % is also recorded during the same period. Overall, as per above assessments, the quality of forests in Yavatmal Forest Division has improved during the previous plan period.

2.4.1 DISFORESTATION

No disforestation is done in the division during the previous plan period.

2.4.2 AREA DIVERTED FOR NON- FORESTRY PURPOSES UNDER FOREST CONSERVATION ACT, 1980

A total area of 88.83 ha. forest land has been diverted for non forestry purposes during the last plan period in the division. And, an area of 104.63 ha. is received for compensatory afforestation during the same period. The prescription for compensatory afforestation land is allotted to concerned working circles adjoining to the area. For example, if the CA land is adjoining to a compartment of Improvement working circle, then CA land is allotted to IWC. Details of projects are as follows:

**TABLE NO. 2.7: AREA DIVERTED FOR NON- FORESTRY PURPOSES UNDER FOREST
CONSERVATION ACT, 1980**

Sr. No.	Project	User Agency	Diverted Area		CA Land			
			Area diverted in Ha.	Compartments	Village	Survey No.	Area in Ha.	Status of land (RF/PF)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	NH 361	National Highway Authority of India	34.98	567	--	--	--	--
2	NH 361	National Highway Authority of India	11.49	352, 513, 499, 496, 487, 498, 305, 284, 10, 11, 51, 315	--	--	--	--
3	Khorda Project	--	39.45	518, 519, 520, 523	Aakpuri	401	39.45	RF
4	Sewage Treatment Plant (STP)	Maharashtra Jeevan Pradhikaran Division, Yavatmal	2.9	288, 493, 512, 513	Nanza	63	3.00	Unclass
		Total :	88.83				42.45	

The details of forest area diverted for non forestry purposes under FCA, 1980 is given in **Appendix No. V** of Volume II. The total forest area received for compensatory afforestation against FCA, 1980 is 42.45 ha and details are provided in **Appendix No.XLIX** of Volume II. The details of “identified forests” as per Supreme Court order is given in **Appendix No. I (B)** of Volume II.



2.4.3 AREA DIVERTED FOR NON- FORESTRY PURPOSES UNDER FOREST RIGHT ACT, 2006

A total of 163 individual rights claims and 217 community rights claims pertaining to Yavatmal Forest Division were accepted by the DLC. The status of

implementation of FRA, 2006 in Yavatmal Division (Up to March, 2022) is shown in the table below:

**TABLE NO. 2.8: THE STATUS OF IMPLEMENTATION OF FRA 2006 IN YAVATMAL
FOREST DIVISION**

Sr. No.	Type of FRA benefit	No. of claims submitted at Gram Sabha	No. of claims accepted by DLC	Percentage of acceptance	Total Area of accepted claims (ha.)
(1)	(2)	(3)	(4)	(5)	(6)
1	Individual Forest Right	371	163	44%	200.46
2	Community Forest Right	217	217	100%	42531.01
3	FRA U/S 3(2)	34	34	100%	8.68
	Total	622	414	67%	42740.15

The details are given in **Appendix No.VI.**



2.4.3.1 IMPLEMENTATION OF FRA

While the Forest Rights Act (FRA), 2006 in India has been primarily benefiting indigenous communities, there are some potential negative impacts on forest areas that should be considered:

1. PROMOTION TO ENCROACHMENTS: In certain cases, the FRA has been misused to legitimize encroachments and illegal activities in forest areas. It might enhance the encroachment in forest land with a belief that the encroachments shall be legitimized in future.

2. FRAGMENTATION AND DEGRADATION: The process of recognizing individual and community forest rights can lead to the fragmentation of forest areas. When land is allocated to different households or communities, it may result in the creation of small and disconnected patches of forests. This fragmentation can disrupt ecological connectivity and lead to habitat degradation.

3. INADEQUATE IMPLEMENTATION: The effective implementation of the FRA has been a challenge due to inadequate resources, lack of awareness, and limited capacity at the local and state levels. This can result in delays in the recognition of forest rights, weak enforcement of regulations, and insufficient support for sustainable forest management practices.

4. CONFLICTS WITH FOREST DEPARTMENT: The process of identifying and recognizing forest rights has sometimes led to conflicts between forest-dwelling communities and field staff.

It is important to note that these negative impacts are not inherent to the FRA itself but are primarily a result of inadequate implementation, governance challenges, and conflicts of interest. The rights granted under FRA should be co-terminus with the duties assigned to the right holders in the same legislation. And the Management Plans for implementation of Community Forest Rights should be prepared adhering to the principles and objectives of this working plan.

2.5 THREATS TO THE FOREST

The forests of Yavatmal forest division mostly suffer from unregulated grazing, illicit felling, encroachments and repeated forest fires. They disrupt the flow of goods and services from forests by affecting tree growth and survival, water quality and yield, and biodiversity. The other agencies which caused injury to the forests such as droughts, frost, floods, plants and insects are negligible.

ILLICIT FELLING: Illicit felling happens for commercial and domestic purposes. As this forest is adjoining to the border district of Nanded, people within the district and from adjoining areas indulge in illicit felling in areas where the good quality teak forests are available. Sometimes people from the adjoining State of Telangana come in groups, cut teak timber and transport it illegally where they get higher prices. Local people in and around the forest area of the division may indulge in illicit felling for meeting their domestic needs such as requirement of fuel, small timber, firewood as there is a huge gap between demand and supply of forest

produce. People generally indulge in illicit felling due to unemployment, higher prices of some of the forest products in the market like teak. Lopping of trees and shrubs for rab burning is also observed. In general, illicit felling, lopping and pollarding of forest species has further deteriorated the forest crop in terms of quality and quantity.

FIRE: Forest fires are most destructive in the dry season from February and continue up to June. During this period the forests are vulnerable to fires and the fires that take place by the end of winter and at the beginning of summer are not very damaging. Most of the fires that take place in these forests are man-made and hamper the establishment of natural regeneration. The damage is very severe when freshly felled material is lying in the coupe and fire takes place in the plantation. Young regeneration suffers a lot as they get damaged or killed due to die back. In this area fires are ignited by grazers, intentionally or unintentionally or by villagers who go for Mahua (*Madhuca longifolia*) collection and by people indulged in Tendu (*Diospyros melanoxylon*) leaf collection. Repeated fires in the forest areas during the dry season cause extensive damage to the tree growth and reproduction. Late fires in the grassy areas or in closed coupes result in fire calamity. In this area fires are generally ground fires and creeping fires which may not reach to crown level as in case of conical forests. Fires cause a lot of damage not only to regeneration but also to wildlife. It also destroys various microbes in the soil which convert leaf litter into humus. The total area of forests affected during the previous plan period due to forest fires is 899.02 ha.

GRAZING: Grazing is another damaging agency of forests which destroys young regeneration, plantation due to trampling of the areas and excessive movement of cattle population leads to compaction of soil resulting in less porosity of the soil. This makes the soil less conducive for the establishment of young regeneration. Uncontrolled cattle movement is very much common in the forests around the villages. Continuous, unrestricted grazing is very much harmful for the tree growth and also for the establishment of regeneration. The forests establish well in the areas where there is regulated grazing or no grazing. On the contrary, considerable

damage has been noticed in the areas where there is uncontrolled excessive grazing more than the carrying capacity of the forests. Grazing in the forests is not uniform as cattle population is restricted to village areas. The grazing pressure is very much serious in the forests especially in summer season i.e. February to June. During this period the forests go dry and in some areas, the graziers indulge in lopping of trees to feed their cattle. Sheeps and goats are not allowed to graze in the forests which are meant for production of timber. However, the forests are still suffering from grazing of sheep and goats in this region.

ENCROACHMENTS: The encroachments though may not be serious in this area but forest areas adjoining agricultural fields of farmers are being encroached especially during the month of monsoon. Some of the forest areas have been cleared, denuded and utilized for agricultural purposes.

TABLE NO.2.9: COMPARTMENT WISE ENCROACHMENT ON FOREST AREA

Sr. No.	Name of Range	Compartment No.	Encroached Area (ha.)
(1)	(2)	(3)	(4)
1	Jodmoha	C 87	69.000
		C 88	58.068
		325	1.541
2	North Arni	320	71.840
		293	10.000
		34	16.430
3	Darwha	178	0.600
		589	0.530
		140	0.500
		138	1.000
		149	1.000
		559	1.000
		152	1.250
		177	0.310
		135	0.100

Sr. No.	Name of Range	Compartment No.	Encroached Area (ha.)
(1)	(2)	(3)	(4)
		136	0.150
		117	0.320
		101	2.100
		126	2.500
		108	0.010
		101	2.100
		767	1.000
		61	0.450
		85	0.040
4	South Arni	36	2.000
5	Yavatmal	460	0.540
6	Ner	425, 426	1.56
		Total :	245.93

DAMAGE BY WILD ANIMALS: In Yavatmal division, the primary culprits responsible for damaging young regeneration through grazing and browsing are predominantly black buck, nilgai, and to some extent, chital. Furthermore, wild pigs, hares, and porcupines contribute to the damage occurring within the plantation. Notably, wild pigs are observed causing harm to bamboo plantations during their early growth stages. Porcupines, on the other hand, tend to consume the rhizome and bark of trees such as Haldu, Moha, and Amaltas near the tree's base, which negatively impacts the tree's establishment.

Monkeys are known to cause significant damage to flowers and fruits on the trees. Chital, specifically, pose a threat by damaging the bark of Shivan trees at their base, resulting in the tree's girdling and subsequent death. However, it is worth mentioning that the damage inflicted by wild animals is relatively less severe when compared to the harm caused by domestic animals.

INSECTS AND FUNGI : In this area teak skeletonizer (*Eutectona machaeralis*) and teak defoliator (*Hyblaea puera*) are common. The insect attack is noticed mostly during rainy season.

INVASIVE ALIEN SPECIES : Among the major threats faced by native plants and animal species (and their habitats), the one posed by the invasive alien species is truly scaring since it is considered second only to that of habitat loss. Damage by climbers mostly confines to the forests along the river bank and along the nalla banks in this area. Cheelati, Ironi are the main climbers which cause harm to the forest in this area. Damage by Lantana (*Lantana camara*), Gliricidia (*Gliricidia sepium*) and Ran-tulas (*Hyptis suaveolens*) is noticed affecting both regeneration and growth by covering forest growth and competing for spaces.

DROUGHT: Drought affects the growth of plantation, establishment of regeneration and also growth of forest crops as the soil moisture and water are vital ingredients of growth and regeneration.

FROST: Injury due to frost is not seen in this area.

WIND STORMS: No considerable damage is noticed due to wind storms in this area.

SOIL EROSION: Soil erosion is noticed in this area especially along the river and streams. Sheet erosion is very common in the entire area. Gully formation takes place due to erosion along the river banks. In some of the areas, roots of trees are exposed due to excessive erosion of the soil leading to the windfall of the trees.

2.6 DISTRIBUTION OF DIFFERENT FOREST TYPES

As per Champion and Seth's classification, forests of Yavatmal forest division fall in Group 5 "Tropical Dry Deciduous Forests" and belongs to sub- group 5 A- "Southern Tropical Dry Deciduous". Climax types observed include 5A/C_{1b}-Dry Teak Forest, 5A/C₃ – Southern Dry Mixed Deciduous Forest and 5/DS₁ – Dry Deciduous Scrub. The major area of Yavatmal forest division is covered by teak forests generally

of coppice origin. The crop is stunted in areas near human habitation and straight-boled in remote areas.

The forests are categorized on the basis of various local factors like soil texture, depth, soil moisture, topography and also environmental conditions. Most of these forests suffer from biotic factors like heavy grazing, illicit felling and repeated fire incidences and also to some extent encroachments. The forests of Yavatmal division are situated under soils derived from underlying trap characterized by presence of teak of different qualities depending upon the configuration of ground, soil depth, structure and moisture contents of the soil. These forests are characterized by the presence of quite a high proportion of teak (upto 70 %). Majority forest area of Yavatmal forest division represents site quality IVa and IVb.

2.7 TREE COVER OUTSIDE FOREST AREA

Accurate evaluation of a country's forest and tree resources is crucial for developing effective strategies in the forestry sector. Precise data and up-to-date information on forest cover, volume of growing stock, and changes in trends are fundamental for policy formulation and planning purposes. In most countries, there is a significant amount of tree wealth existing outside continuous forested areas, known as "Trees Outside Forests" (TOF). These trees can be found in small woodlots, block plantations, along linear features such as roads and canals, and scattered on farmlands, homesteads, community lands, and urban areas. Traditionally, TOF were not thoroughly surveyed, and limited quantitative information was available. However, there has been increasing global interest in TOF due to their contribution to the rural economy and as a source of valuable forest produce.

The establishment of tree populations along avenues has been a widespread practice since the 1950s, primarily along roads, railway tracks, bunds, canals, riverbanks, parks, blocks, and other vacant areas. Subsequently, farm forestry, agroforestry, and wasteland afforestation activities have further enhanced the abundance of trees in the state. The Forest Survey of India (FSI), has been conducting

assessments of TOF. However, such an assessment has not been conducted specifically for Yavatmal district.

From 2009 to 2022, Social Forestry Yavatmal Division has carried out roadside linear plantations of 907.50 kms and block plantations of 693 hectares. Detailed information can be found in **Appendix No. VII (A)** and **Appendix No. VII (B)**. Also, the details of plantations carried out in the Nagar Parishad areas of Yavatmal Division are provided in **Appendix No. VII (C)**.



2.8 SHIFTING CULTIVATION (JHUMMING)

Shifting cultivation is not practiced in this forest division.

CHAPTER 3

MAINTENANCE, CONSERVATION AND ENHANCEMENT OF BIODIVERSITY

3.1 FOREST COMPOSITION AND DISTRIBUTION

The Forests of Yavatmal Forest Division belong to the following types as per the revised classification of forest types of India by H.G.Champion & S.K.Seth:

Group	: 5 Tropical dry deciduous Forests
Sub group	: 5A Southern Tropical dry deciduous forests
Climax types	: a) 5A/C ₃ – Southern Dry Mixed Deciduous Forest b) 5A/C _{1a} – Very Dry Teak Forests c) 5/DS ₁ – Dry Deciduous Scrub

The forests are categorized into good quality teak forests, poor quality teak forests and degraded scrub forests based on the type of forests and local factors which influence the forest quality in this area. Majority of forest area is covered by teak forests generally of coppice origin representing site quality IV with few patches of site quality III. The crop is mainly straight-boled though there are certain malformed, pollarded trees, due to either repeated management under CWR system or illicit felling and other biotic pressure. Teak and its associates form top canopy. In certain areas adjoining human habitations there is no understorey or understorey has sparse vegetation. The crop density varies from 0.2 to 0.7 and blank patches also occur frequently. The soil is compact, dry and full of boulders at places. The natural regeneration of both teak and miscellaneous species is inadequate. The proportion of teak in growing stock is high.

3.1.1 FLORISTIC COMPOSITION

3.1.1.1 5A/C₃ – SOUTHERN DRY MIXED DECIDUOUS FOREST

This type of forests are distributed as narrow strip along the bank of tributaries of river Painganga, where soil is formed from trap rock and gneiss and it is characterized by deep soil accumulated due to siltation. These type of forests are mostly situated in Wadgaon range and part of South Arni range adjoining river Painganga. Teak forms majority of growing stock in this area. Density of crop varies from 0.2 to 0.7 and the crop is generally middle aged to mature. The topography of the area is almost plain. The natural regeneration is poor due to biotic pressure, fire etc. The composition of species is given below:

TABLE NO. 3.1: FLORISTIC COMPOSITION

Sr.No.	Local Name	Botanical Name
(1)	(2)	(3)
Upper Storey		
1	Teak	(<i>Tectona grandis</i>) is principal species
2	Ain	<i>Terminalia alata</i>
3	Dhawada	<i>Anogeissus latifolia</i>
4	Tiwas	<i>Ougenia oojeinesis</i>
5	Lendia	<i>Lagerstroemia parviflora</i>
6	Tendu	<i>Diospyros melanoxylon</i>).
7	Satpudi	<i>Dalbergia paniculata</i>
8	Bhirra	<i>Chloroxylon swietenia</i>
9	Kalam	<i>Mitragyna parviflora</i>
10	Rohan	<i>Soyimida febrifuga</i>
11	Salai	<i>Boswellia serrata</i>
12	Semal	<i>Bombax ceiba</i>
13	Beheda	<i>Terminalia bellirica</i>

Sr.No.	Local Name	Botanical Name
(1)	(2)	(3)
14	Sisham	<i>Dalbergia latifolia</i>
15	Bija	<i>Pterocarpus marsupium</i>
16	Bel	<i>Aegle marmelos</i>
Under Storey: The understory consists of trees, shrubs, grass and climbers. The major species are:		
	Trees	
17	Amaltas	<i>Cassia fistula</i>
18	Awala	<i>Embllica officinalis</i>
19	Char	<i>Buchanania lanzan</i>
20	Dudhi	<i>Wrightia tinctoria</i>
21	Ghoti	<i>Zizyphus xylocarpa</i>
22	Palas	<i>Butea monosperma</i>
23	Dhaman	<i>Grewia tiliaefolia</i>
24	Moyen	<i>Lannea grandis</i>
25	Bartondi	<i>Morinda tinctoria</i>
26	Lokhandi	<i>Ixora parviflora</i>
	Shrubs	
27	Bharati	<i>Gymnosporia montana</i>
28	Parijatak	<i>Nyctanthes arbortristis</i>
29	Morogphali	<i>Helicteres isora</i>
30	Dhayati	<i>Woodfordia fruticosa</i>
31	Raymuniya	<i>Lantana camara</i>
32	Tendu	<i>Diospyros melanoxylon</i>
	Grasses	
33	Bhurbhusi	<i>Eragrostis tenella</i>
34	Kodmor	<i>Apluda varia</i>

Sr.No.	Local Name	Botanical Name
(1)	(2)	(3)
35	Marvel	<i>Dichanthium annulatum</i>
36	Dub	<i>Cynodon dactylon</i>
37	Paonya	<i>Schima sulcatum</i>
	Climbers	
38	Palasvel	<i>Butea superba</i>
39	Mahul	<i>Bauhinia vahlii</i>
40	Pivervel	<i>Combretum ovalifolium</i>
41	Chilati	<i>Acacia pinnata</i>
42	Iruni	<i>Zizyphus oenoplia</i>
43	Gunj	<i>Abrus precatorius</i>
44	Rankand	<i>Dioscorea bulbifera</i>
45	Ran draksh	<i>Vitex tenuifolia</i>

3.1.1.2 5A/C_{1a} – VERY DRY TEAK FORESTS

These forests are mostly situated in open areas of Darwha, Ner, Jodmoha, Yavatmal, North Arni ranges and in patches adjoining human habitations. These forests are subjected to illicit felling, encroachments, uncontrolled grazing, frequent fires etc. The crop is dominated by teak. Under storey of the crop is lacking or inadequate because of excessive biotic pressure. The majority of forest area of Yavatmal Forest Division is covered by poor quality teak forests which are mainly of coppice origin. The site quality in these areas is mostly IV also III at very few places. The area of these forests is mostly undulating and hilly. The density of the crop vary from 0.2 to 0.6. Teak constitutes majority of the crop and height of the top storey is 12 to 18 metres. The status of natural regeneration is very poor. The soil is compact, murumy with lot of boulders and without humus. The floristic composition is almost similar to that of good quality Teak forests.

3.1.1.3 5/DS₁ – DRY DECIDUOUS SCRUB

These forests are an extension of teak forests indicating their degree of degradation to such an extent to be reduced to scrub forests with little or no tree growth. These forests are affected with excessive biotic pressure of nearby villages. These forests are degraded with malformed, stunted tree growth, with very little tree growth and some patches are without any tree growth. Some of these forests are managed under Pasture and Fodder Reserve WC in the previous WP. The floristic composition is like that of good quality teak forests except that they have a very few trees and contain scrub and grass. The soil is generally murumy, highly compact and without any humus. The following species are found in this type of forest:

TREES AND SHRUBS

Teak (*Tectona grandis*), Tendu (*Diospyros melanoxylon*), Khair (*Acacia catechu*), Amaltas (*Cassia fistula*), Palas (*Butea monosperma*), Bharati (*Gymnosporia spinosa*), Dhayati (*Woodfordia fruticosa*), Hiwar (*Acacia leucophloea*), Ghoti (*Zizyphus xyloperua*), Nirgudi (*Vitex negundo*) etc,

Grass: Kusal (*Heteropogon contortus*), Kunda (*Ischoemum pilosum*), Bhurbhusi (*Eragrostis tennela*).

3.2 PLANT SPECIES DIVERSITY

IVI Index table prepared as per the enumeration data is given below:

TABLE NO. 3.2: IMPORTANCE VALUE INDEX (IVI) TABLE FOR YAVATMAL FOREST DIVISION

Species Name	Relative Frequency			Relative Density			Relative Basal Area		IVI
	Plots	Frequency	Relative Frequency (%)	Species	Density	Relative Density (%)	Basal Area (Sum)	Relative Basal Area (%)	(Importance Value Index)
	(Count)			(Count)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ain	180	0.112782	3.659	501	3.139098	1.240	19.42163	1.214	6.112
Alai	123	0.077068	2.500	3784	23.70927	9.363	190.741	11.921	23.784
Amaltas	249	0.156015	5.061	518	3.245614	1.282	3.699634	0.231	6.574
Anjan	25	0.015664	0.508	63	0.394737	0.156	6.550899	0.409	1.073

Species Name	Relative Frequency			Relative Density			Relative Basal Area		IVI
	Plots	Frequency	Relative Frequ-ency (%)	Species	Density	Relative Density (%)	Basal Area (Sum)	Relative Basal Area (%)	(Importance Value Index)
	(Count)			(Count)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Apta	8	0.005013	0.163	19	0.119048	0.047	1.112982	0.070	0.279
Arjun	1	0.000627	0.020	1	0.006266	0.002	0.057419	0.004	0.026
Awla	9	0.005639	0.183	21	0.131579	0.052	0.37261	0.023	0.258
Babhul	40	0.025063	0.813	90	0.56391	0.223	2.363539	0.148	1.183
bala	1	0.000627	0.020	2	0.012531	0.005	0.011198	0.001	0.026
Bamboo	1	0.000627	0.020	1	0.006266	0.002	0.000795	0.000	0.023
Bartondi	1	0.000627	0.020	2	0.012531	0.005	0.008973	0.001	0.026
Beheda	43	0.026942	0.874	76	0.47619	0.188	3.266394	0.204	1.266
Bel	18	0.011278	0.366	31	0.194236	0.077	1.352148	0.085	0.527
Bharati	25	0.015664	0.508	47	0.294486	0.116	0.352289	0.022	0.646
Bhel palas	1	0.000627	0.020	1	0.006266	0.002	0.02861	0.002	0.025
Bhingari	5	0.003133	0.102	6	0.037594	0.015	0.586035	0.037	0.153
Bhosa	13	0.008145	0.264	16	0.100251	0.040	0.278561	0.017	0.321
Bhui	2	0.001253	0.041	2	0.012531	0.005	0.293256	0.018	0.064
Biba	10	0.006266	0.203	11	0.068922	0.027	0.32948	0.021	0.251
Bor	22	0.013784	0.447	31	0.194236	0.077	0.13148	0.008	0.532
Charoli	22	0.013784	0.447	34	0.213033	0.084	1.833779	0.115	0.646
Chinch	6	0.003759	0.122	8	0.050125	0.020	0.96753	0.060	0.202
Dhamna	1	0.000627	0.020	1	0.006266	0.002	0.012716	0.001	0.024
Dhawada	198	0.12406	4.024	702	4.398496	1.737	130.1882	8.136	13.898
Dhobi	1	0.000627	0.020	1	0.006266	0.002	0.014019	0.001	0.024
Dudhi	112	0.070175	2.276	965	6.046366	2.388	17.21027	1.076	5.740
Dudhkhuda	2	0.001253	0.041	6	0.037594	0.015	0.049981	0.003	0.059
Durguli	4	0.002506	0.081	6	0.037594	0.015	0.268564	0.017	0.113
Fetra	1	0.000627	0.020	1	0.006266	0.002	0.014019	0.001	0.024
Garadi	21	0.013158	0.427	126	0.789474	0.312	2.190725	0.137	0.876
Gargoti	1	0.000627	0.020	1	0.006266	0.002	0.004967	0.000	0.023
Glyrisidia	1	0.000627	0.020	4	0.025063	0.010	0.04108	0.003	0.033
gogari	1	0.000627	0.020	1	0.006266	0.002	0.029572	0.002	0.025
Halad behala	1	0.000627	0.020	6	0.037594	0.015	0.193899	0.012	0.047
Haladbhera	4	0.002506	0.081	5	0.031328	0.012	0.463821	0.029	0.123
Haldu	5	0.003133	0.102	13	0.081454	0.032	0.43742	0.027	0.161
Hiwar	267	0.167293	5.427	633	3.966165	1.566	9.320395	0.582	7.576

Species Name	Relative Frequency			Relative Density			Relative Basal Area		IVI
	Plots	Frequency	Relative Frequency (%)	Species	Density	Relative Density (%)	Basal Area (Sum)	Relative Basal Area (%)	(Importance Value Index)
	(Count)			(Count)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Jambhul	2	0.001253	0.041	24	0.150376	0.059	0.043949	0.003	0.103
Kadamb	2	0.001253	0.041	2	0.012531	0.005	0.320007	0.020	0.066
kalamb	45	0.028195	0.915	89	0.557644	0.220	7.557451	0.472	1.607
Kalbondi	2	0.001253	0.041	2	0.012531	0.005	0.250539	0.016	0.061
Karanj	7	0.004386	0.142	19	0.119048	0.047	0.12467	0.008	0.197
Karu	11	0.006892	0.224	13	0.081454	0.032	1.15581	0.072	0.328
Kashid	2	0.001253	0.041	8	0.050125	0.020	0.10047	0.006	0.067
Katsawar	2	0.001253	0.041	2	0.012531	0.005	0.081929	0.005	0.051
kawath	2	0.001253	0.041	6	0.037594	0.015	0.049758	0.003	0.059
Khair	47	0.029449	0.955	124	0.776942	0.307	3.184894	0.199	1.461
Kharasani	1	0.000627	0.020	35	0.219298	0.087	1.736774	0.109	0.215
kirmali	2	0.001253	0.041	4	0.025063	0.010	0.138172	0.009	0.059
Koain	1	0.000627	0.020	2	0.012531	0.005	0.018327	0.001	0.026
Kuda	1	0.000627	0.020	1	0.006266	0.002	0.009735	0.001	0.023
Kumbhi	2	0.001253	0.041	2	0.012531	0.005	0.198683	0.012	0.058
Lendia	368	0.230576	7.480	1212	7.593985	2.999	20.56781	1.285	11.764
Lokhandi	7	0.004386	0.142	18	0.112782	0.045	0.242322	0.015	0.202
Maharukh	3	0.00188	0.061	4	0.025063	0.010	0.171336	0.011	0.082
marvel	1	0.000627	0.020	1	0.006266	0.002	0.007153	0.000	0.023
Medsing	26	0.016291	0.528	56	0.350877	0.139	5.067684	0.317	0.984
Moha	54	0.033835	1.098	87	0.545113	0.215	9.530252	0.596	1.908
Moin	74	0.046366	1.504	114	0.714286	0.282	9.808837	0.613	2.399
Muli	13	0.008145	0.264	47	0.294486	0.116	3.182414	0.199	0.579
Namnar-ayana	1	0.000627	0.020	1	0.006266	0.002	0.003505	0.000	0.023
Neem	243	0.152256	4.939	526	3.295739	1.302	7.562449	0.473	6.713
Nirgudi	2	0.001253	0.041	2	0.012531	0.005	0.007383	0.000	0.046
Padari	3	0.00188	0.061	4	0.025063	0.010	0.489952	0.031	0.101
Palas	1276	0.799499	25.935	9570	59.96241	23.680	133.0467	8.315	57.930
Pandhara Shiras	1	0.000627	0.020	1	0.006266	0.002	0.017556	0.001	0.024
Pandhar-akhair	1	0.000627	0.020	7	0.04386	0.017	0.375264	0.023	0.061
parijat	1	0.000627	0.020	2	0.012531	0.005	0.022968	0.001	0.027
phepari	1	0.000627	0.020	1	0.006266	0.002	0.003179	0.000	0.023

Species Name	Relative Frequency			Relative Density			Relative Basal Area		IVI
	Plots	Frequency	Relative Frequency (%)	Species	Density	Relative Density (%)	Basal Area (Sum)	Relative Basal Area (%)	(Importance Value Index)
	(Count)			(Count)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Pimpal	2	0.001253	0.041	9	0.056391	0.022	0.093254	0.006	0.069
prosopis	1	0.000627	0.020	1	0.006266	0.002	0.016093	0.001	0.024
Rayganda	1	0.000627	0.020	1	0.006266	0.002	0.000795	0.000	0.023
Rohan	1	0.000627	0.020	1	0.006266	0.002	0.216366	0.014	0.036
Rohini	5	0.003133	0.102	8	0.050125	0.020	0.910126	0.057	0.178
sadada	1	0.000627	0.020	1	0.006266	0.002	0.005372	0.000	0.023
Salai	103	0.064536	2.093	204	1.278195	0.505	21.30076	1.331	3.930
Sawar	2	0.001253	0.041	2	0.012531	0.005	0.147025	0.009	0.055
shembali	1	0.000627	0.020	1	0.006266	0.002	0.01088	0.001	0.023
Shiras	3	0.00188	0.061	5	0.031328	0.012	0.324131	0.020	0.094
shisam	2	0.001253	0.041	37	0.23183	0.092	0.306115	0.019	0.151
Shiwansag	2	0.001253	0.041	2	0.012531	0.005	0.013264	0.001	0.046
Sissoo	2	0.001253	0.041	3	0.018797	0.007	0.015529	0.001	0.049
Sitaphal	2	0.001253	0.041	3	0.018797	0.007	0.028245	0.002	0.050
Subabhul	1	0.000627	0.020	1	0.006266	0.002	0.001144	0.000	0.023
tarota	1	0.000627	0.020	1	0.006266	0.002	0.000199	0.000	0.023
Teak	810	0.507519	16.463	19392	121.5038	47.985	963.8042	60.234	124.682
Tendu	346	0.216792	7.033	1001	6.27193	2.477	13.27223	0.829	10.339
tiwalni	1	0.000627	0.020	1	0.006266	0.002	0.132251	0.008	0.031
Umbar	3	0.00188	0.061	16	0.100251	0.040	0.129605	0.008	0.109
Wad	1	0.000627	0.020	1	0.006266	0.002	0.085958	0.005	0.028
	Total	3.082707	100		253.2143	100	1600.091	100	300

3.3 STATUS OF BIODIVERSITY CONSERVATION IN FORESTS

The Biological Diversity Act, 2002 provides for establishment of Local level Biodiversity Management Committees to deal with any matter concerning conservation of biological diversity, its sustainable use and fair and equitable sharing of benefits arising out of the use of biological resources and associated knowledge.

A total of 428 Biodiversity Management Committees have been established at the gram panchayat level in the talukas of Yavatmal Division. The details are as follows:

TABLE NO. 3.3: LIST OF TALUKAWISE BIODIVERSITY MANAGEMENT COMMITTEES

Sr.No.	Taluka	Number of Gram Panchayats	BMCs established
(1)	(2)	(3)	(4)
1	Yavatmal	88	88
2	Babhulgaon	65	65
3	Ner	51	51
4	Darwha	86	86
5	Arni	77	77
6	Kalamb	61	61
Total		428	428

The forests of Yavatmal are rich in biodiversity. However, in view of the presence of large areas under teak, the repeated fires over the years, preferential treatment to commercial species, enhancement of biodiversity in the forests as a whole needs to be addressed.

Assessment of status of plant and faunal species and their periodic monitoring can be helpful in formulating strategies for conservation, maintenance and enhancement of overall biodiversity through sustainable management and use practices. Assessment of biodiversity especially the lower forms of life (algae, fungi, lichen, epiphytes, parasites, etc.) of a forest division must be made an on-going programme with the support from State Biodiversity Board. All these assessments will help in updating and enriching the Peoples Biodiversity Register (PBR) as provided in the Biodiversity Act, 2002.

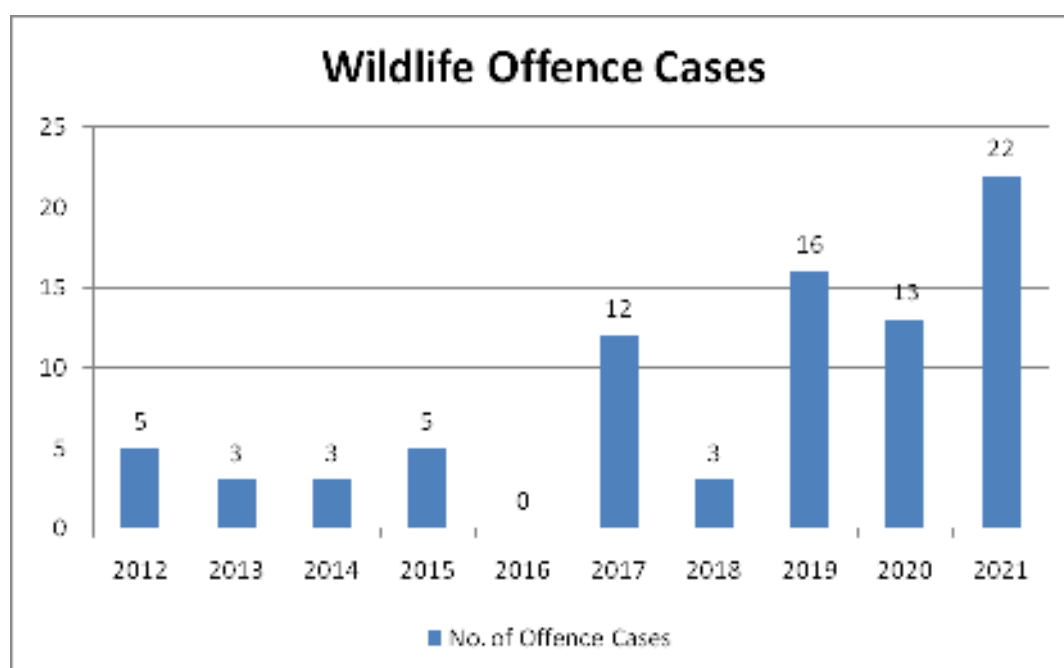
Preparation of People's Biodiversity Register (PBR) is completed in the Division. Efforts should be made to consistently update the registers periodically. Efforts are also needed to ensure that a part of profits generated from any commercial exploitation of biodiversity in the Division should be distributed among

the local people. Mechanisms and models may be developed in future to achieve this.

3.4 STATUS OF SPECIES PRONE TO OVER EXPLOITATION

The status of species prone to over exploitation in the division needs further research with the help of the conservation and subject experts. No cases of exploitation were registered in this division under Biodiversity Act, 2002 in the past 10 years. However, a total of 82 cases were registered under Wildlife Protection Act, 1972. The year wise distribution is shown below:

OFFENCES WITH RESPECT TO WILDLIFE REGISTERED DURING LAST TEN YEARS



The above chart of wildlife offenses reflects the increasing pressure on wildlife. It is also a matter of concern that not all cases of illicit exploitation are actually detected, considering the covert nature of the crimes. Extra efforts are required to protect species prone to exploitation. The in-situ and ex-situ conservation efforts should be undertaken for sensitive/RET/IUCN Red List species and their habitats in the Division. Among the important Schedule I species found in the area of the division are Tiger, Leopard, Sloth bear and Pangolin.

3.5 CONSERVATION OF GENETIC RESOURCES

The genetic resource of the forests is an invaluable asset that needs to be studied in detail. The documentation of the flora and the fauna of the division should be taken at the earliest with the help of experts in the field. The research wing of the department needs to identify areas of high biodiversity in collaboration with the territorial wing and carry out research and documentation of the species available.

1. There is no identified Fodder resource Plot in Yavatmal Forest Division.
2. There are no identified Preservation Plots in the Yavatmal Forest Division.
3. There is no identified Medicinal Plant Conservation Area in Yavatmal Forest Division.

3.6 FAUNA AND THEIR HABITATS

3.6.1 DISTRIBUTION OF THE WILDLIFE

The Yavatmal Forest Division, in the past, served as a natural habitat for a diverse range of wildlife. Historical records, such as the Berar gazetteer, mentioned the abundance of tigers and panthers in the region, making night time travel on foot in the Division perilous. Numerous wildlife sightings near Yavatmal town were reported in the past, with occasional appearances of leopards in the vicinity. Prior to the enactment of the Wildlife (Protection) Act, 1972, hunting of wild animals was permitted officially in this area. In addition to carnivores, various herbivore species like nilgai, wild pig, black buck, chinkara, cheetal, sambar, and porcupine can be found in this area. Some less common wild animals include wild dogs, wolves, hyenas, and others. As a result of the increasing human and cattle population, the area has faced immense biotic pressure, leading to habitat destruction, fragmentation of wildlife corridors, and the consequent decline in the population of wild animals.

There is a wide variety of fauna noticed in this division; however, its distribution is quite uneven. Wildlife population density varies with the habitat depending upon availability of food, water and shelter.

TABLE NO. 3.4: WILDLIFE POPULATION ESTIMATION

Details of Wildlife population estimation of Yavatmal Forest Division are given below:

Sr. No.	Species	Wildlife Estimation					
		2016	2017	2018	2019	2020	2021
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Leopard	-	-	-	-	16	20
2	Hyena	-	-	-	14	-	-
3	Wild dog	-	-	-		3	4
4	Jackal	40	40	10	16	25	14
5	Wolf	50	54	56	50	61	64
6	Sloth bear	15	20	20	16	25	24
7	Chausinga	-	-	-	-	-	-
8	Spotted deer	28	19	23	23	32	25
9	Blackbuck	25	32	20	25	15	11
10	Barking deer	45	47	40	76	26	44
11	Nilgai	943	765	808	893	717	803
12	Peafowl	80	37	50	84	50	91
13	Jungle cat	-	2	3	6	15	14
14	Palm civet	-	-	-	-	-	-
15	Mongoose	19	27	28	30	36	37
16	Wild pig	973	476	965	921	904	852
17	Hare	35	34	28	55	45	42
18	Common langur	830	732	850	386	781	757

3.6.2 DESCRIPTION OF THE WILDLIFE

Charismatic fauna such as tigers, leopards, wilddogs, Indian wolves, hynaes etc. occur in this area. Brief descriptions regarding a few species are given below:

- i) **TIGER:** Tigers are crucial in forests as apex predators, regulating prey populations, maintaining ecological balance, and promoting biodiversity.

Tigers play a crucial role in population control of nilgai and wild pig, whose growing numbers pose a threat to agricultural farms adjacent to forests. By regulating their population, tigers help mitigate the destructive impact on agricultural lands, safeguarding the livelihoods of farmers and maintaining the delicate balance between wildlife and human activities.

Though there are no recorded residential tigers in the division, presence of tigers is occasionally noticed in Jodmoha and Yavatmal ranges. Lack of large contiguous forest patches and insufficient prey base are the major inhibiting factors for presence of tigers in this Division.

- ii) **LEOPARD:** Due to the absence of resident tigers in the division, this large feline species assumes the apex role in the majority of territorial food chains within forest, grassland, and agricultural ecosystems. Leopards engage in feeding behavior with wild pigs, effectively controlling their population and mitigating agricultural crop damage.
- iii) **INDIAN WOLF:** Wolves play a vital role in controlling populations of blackbucks and chinkaras, among others, making their protection essential for maintaining ecosystem balance. The species faces threat due to its unique genetic lineage and reliance on human use landscapes. Conservation efforts are crucial to ensure their persistence. They reside in open scrub and grassland areas of Ner and Darwah ranges
- iv) **DHOLE (WILD DOGS):** Dholes are highly social carnivores. They possess a unique and intricate social structure, living in tight-knit packs that work together in pursuit of prey. These intelligent predators exhibit remarkable teamwork and communication, making them efficient hunters. Dholes primarily feed on small to medium-sized ungulates, such as deer and wild pigs, but they are also known to target larger prey when hunting in larger packs. Despite their remarkable adaptations and ecological importance, dholes face threats from habitat loss, fragmentation, and human-wildlife

conflict. Dholes are recorded in forest areas of Jodmoha and Wadgaon ranges.

- v) **HYENA:** The semi-arid region of western Yavatmal Division has shown signs of hyena presence, with observations indicating their use of shrubs and burrows for denning. Hyenas have been detected in areas with denser vegetation as well as in agricultural plains that are less hilly and contain shrub-lands. It is possible that hyenas, being scavengers in the ecosystem, can adapt to varying environments to some extent, allowing them to reside even in human-use landscapes.

AVIFAUNA: A total of 113 bird species have been identified in Yavatmal division. Details are provided in the 'List of Fauna'.

3.7 THREATS AND CHALLENGES TO WILDLIFE

3.7.1 POACHING

Poaching remains a major threat to wildlife in the division, despite the strict provisions of the Wildlife (Protection) Act, 1972. The primary motive behind poaching is the illegal trade of animal skins, bones, and flesh. During the summer, when the availability of water holes decreases and water levels recede, animals become more vulnerable to poaching. Among the commonly targeted wildlife in this division are nilgai, wild pig, and hares.

Poachers have devised a dangerous method of poisoning drinking water by adding high concentrations of urea. Animals that consume this poisoned water suffer from intense gas formation in the stomach and blockage of their respiratory organs, leading to death within hours. The poachers then exploit the carcass by extracting the skin or bones for illegal trafficking.

The use of nets and traps to capture birds, hares, and occasionally small deer is an ongoing practice. Another concerning method involves laying electric wires along animal tracks, taking advantage of the high tension lines passing through the

forests. This not only poses a significant threat to wildlife but also endangers local people and domestic cattle.

Wild animals are targeted for their skins, bones, and meat, while some are trapped for the purpose of keeping them as pets. Water holes are particularly vulnerable to poaching activities, and nets and traps are commonly employed to capture birds, deer, and small mammals.

TABLE NO. 3.5 : STATEMENT OF POACHING/ NATURAL/ ACCIDENTAL DEATHS OF WILD ANIMALS (FROM 2010-11 TO 2021-22)

Year	Poaching Deaths			Natural Deaths			Accidental Deaths		
	Leopard	Other		Leopard	Other		Leopard	Other	
(1)	(2)	(3)		(4)	(5)		(6)	(7)	
2011-12	-	Deer	1	-	-	-	-	-	-
	-	Wild boar	1	-	-	-	-	Nilgai	1
2012-13	-	-	-	-	-	-	1	-	-
2013-14	-	-	-	-	Nilgai	1	5	Nilgai	1
2014-15	-	-	-	-	-	-	2	Nilgai	4
	-	-	-	-	-	-	-	Bear	1
2015-16	-	Peacock	1	1	Nilgai	6	-	-	-
2016-17	-	Deer	2	1	Deer	1	1	Nilgai	1
2017-18	-	-	-	1	Deer	1	1	Nilgai	1
	-	-	-	-	Nilgai	4	-	Deer	1
	-	-	-	-	-	-	-	Fox	1
2018-19	-	-	-	3	Nilgai	3	1	-	-
	-	-	-	-	Peacock	1	-	-	-
	-	-	-	-	Deer	1	-	-	-
	-	-	-	-	Black buck	1	-	-	-
2019-20	-	-	-	-	Nilgai	1	-	-	-
2020-21	-	-	-	-	Nilgai	4	-	Nilgai	1
	-	-	-	-	Deer	2	-	-	-

3.7.2 DISEASE

Livestock from nearby villages frequently enter the forests, coexisting with wild animals and utilizing shared space and resources. There is a risk of water-borne

contagious diseases spreading from livestock to wild animals, with foot-and-mouth disease (FMD) being the most common. Other diseases that can occur include anthrax, rabies, haemorrhagic septicaemia (HS), and canine distemper. FMD poses a significant threat as it has the potential to cause widespread devastation, while diseases like rinderpest, anthrax, and rabies are highly infectious and often result in certain death.

The presence of disease-affected domestic animals in forest areas compromises the health of the herbivore population. Outbreaks of contagious diseases, particularly FMD, have a severe impact on herbivores, leading to a significant decline in their population. Monitoring of wildlife health is virtually nonexistent. It is crucial considering the recent outbreaks of Covid-19, lumpy skin disease and bird flu.

3.7.3 FIRE AND HABITAT DAMAGE

Forest fires have a significant impact on wildlife, causing both immediate and long-term consequences. The intense heat and flames of a fire can directly result in the death of animals caught in its path. The loss of vegetation and shelter leaves wildlife vulnerable to predators and reduces their access to food sources. They may suffer injuries, burns, or smoke inhalation, further endangering their survival. Additionally, the destruction of habitats disrupts ecosystems and displaces wildlife, forcing them to seek alternative territories or compete for limited resources. The long-term effects include changes in biodiversity, as certain species may struggle to recover or adapt to the altered landscape. Forest fires, therefore, have a profound and often devastating impact on the wildlife that depends on these habitats for their survival.

3.7.4 GRAZING

During the last ten years there has been a rise in cattle population. As per 20th Livestock Census, 2019 the total livestock population in this division is about four lakhs. Grazing pressure has increased manifold in the past few years. Grazing

also leads to spread of diseases to wild animals besides affecting the habitat severely. The details of the livestock population are given in the table below:

TABLE NO. 3.6: LIVESTOCK POPULATION AS PER 20th LIVESTOCK CENSUS, 2019

Sr. No.	Taluka	Livestock					Total (3+4+5+6+7)
		Cattle	Buffalo	Sheep	Goat	Pig	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Yavatmal	45990	12714	85	29622	113	88524
2	Babhulgaon	20581	4325	1514	18787	0	45207
3	Kalamb	30844	6159	3926	25734	54	66717
4	Ner	30427	6228	2532	21022	16	60225
5	Darwha	36672	6418	4700	26987	97	74874
6	Arni	40698	4327	142	19058	127	64352
Total		205212	40171	12899	141210	407	399899

3.8 PROTECTION AND MANAGEMENT OF FAUNA

3.8.1 GENERAL HISTORY OF MANAGEMENT

It was stated in Berar gazette of 1870 that tigers and panthers were numerous in the area and it was dangerous to travel in Yavatmal district. Prior to reorganization of state wildlife conservation was ensured under the provisions of Indian Forest Act 1927. Shooting rules were framed by the Government and detailed in the appendix of Central Provinces and Berar Manual Vol. 2, combined with Wild Birds and Animal Protection Act 1912. The Conservator of Forests in consultation with Divisional Forest Officer used to declare certain blocks of Reserve Forest as open for shooting. Then shooting permits were issued by the Divisional Forest Officer.

In 1952 the Indian Board for wildlife was constituted with an object of devising methods and means for conservation of wildlife through coordinated legislative and practical method. Subsequently the Bombay Wild Animals and Wild Birds Protection Act 1951 was enacted and it was considered as the most comprehensive legislation which was made applicable to Vidarbha region in 1961. This act did not propose any significant changes in the management of the game, however it was important as its provisions allowed to operate even in the areas outside the Reserve Forests. As per the provisions laid down in this act, arms license

holders had to register themselves with wildlife preservation officer. Hunting license was categorized into four kinds namely small game, big game, special big game and pet animals. The provisions of this act did not allow carrying out any trade in wildlife trophies without a separate trophy dealer license. For the purpose of hunting the forest division was divided into 20 shooting blocks.

3.8.2 LEGAL POSITION

The forest area of this division was a part and parcel of Central Provinces and Berar State. The provisions in Berar Forest Law in 1886 were passed on October 22, 1886. There was no separate act regarding protection of Wildlife in vogue at that time. It was, under Sec. 3, Sub rule (7), the definition of the forest produce included “skins, tusks, bones and horns”. Under Sec. 8 of the said act “any person who acts in contravention of the said act in the state forests was punishable with the fine which may go up to Rs.50/- when the damage resulting from his offence amounts to more than Rs.25/- , to double the amount of such damage”. Under Sec.10, Sub Sec. (4) of the said act “the residency by orders may regulate any part of the state forest for the hunting, shooting, fishing, poisoning of water or setting trap or snares”. The Berar Law of 1886 was amended by the Berar Forest Law of 1891. Under this amendment Sec.7 (b) states that, forest produce includes the following found in, brought from a forest i.e. to say wild animals, skins, tusks, horns, bones, cocoons, honey, wax and all other parts or produce of animals or forest produce. Sec. 7(2) (B) states offence was punishable with the fine which may extend upto Rs.50/- or when the damages resulting from the offence amounts to more than Rs.25/- , to double the amount of such damage.

In the year 1911 vide Notification No/GIFD/2197-1-B the definition of wildlife as forest produce was included under Sec. 2 (B) (III). Under Sec. 25 (1) of the said act, that any person in contravention of any rules made under this act, which local Government may from time to time prescribe, kills or catches elephants, hunts or shoots fishes, poisons water or sets traps shall be punishable with imprisonment for a term which may extend to 6 months or with the fine not exceeding Rs.500/- or in both in addition to compensation for the damage done to the forests.

After the enactment of Indian Forest Act, 1927, rules related to wildlife regulations were framed under Sec. 26 (1), 76 (d) which was essential to regulate hunting of wild animals and were given in the appendix No. VIII of Madhya Pradesh Forest Manual Volume 2.

Wild Birds and Animal Protection Act, 1912 as amended in 1935 also ensured protection to certain animals and a check of hunting of animals. Shooting block system was initiated in the year of 1947 under the provisions of these two acts. The Conservator of Forests in consultation with the Divisional Forest Officer concerned used to declare the areas having abundant game as open to hunting and the Divisional Forest Officer accordingly issued shooting permits were in the type of game and the number allowed to be hunted together with, the other relevant conditions.

The Bombay Wild Animals and Wild Bird Protection Act, 1951 was extended to Vidarbha region, which has enhanced the scope of management of game outside Reserve and Protected Forest also. Under the provisions of this act regulations were made for registration of armed license holders, categorization of game into small game, big game, special big game and pet animals and also regulated transaction in trophies and other wildlife products. Under this act the statutory wildlife advisory board was constituted in order to advice the Government on various important matters regarding wild animals. In 1952 the Indian Board of wildlife was constituted with the main object of devising ways and means for conservation wildlife through coordinated approach of legislative and political measures and sponsoring the measures to reconstitute National Parks and Wildlife Sanctuary. The comprehensive and unified National and State Park Act of 1971 was passed to provide for appointment of any advisory committee to advise in continuation and declaration of National Parks and Sanctuary and formulation of administrative policy.

In 1972 Parliament enacted Wild Life (Protection) Act, 1972 which came into force in the state since June 1, 1973 and superseded all other acts related to wildlife protection and management in the State. The subsequent rules made under the act are as follows.

1. The Wild Life (Stock declaration) Rules 1973 (came into force in the State since June 1, 1973).
2. The Wild Life (Transactions and Taxidermy) Rules 1973 (came into existence since June 1, 1973).
3. The Wild Life (Protection) Rules 1975 (came into force since March 6, 1975).
4. The Wild Life (Protection), Licensing (additional matter consideration) Rules 1983 became effective since April 14, 1983.

The Wild Life (Protection) Act is a comprehensive legislation that facilitates for effective protection and preservation of Wildlife, moreover it enabled restrictions on hunting and regulation of trade in wild animals as well as the articles made out of wild animals.

Hunting of wild animals is strictly prohibited unless specially permitted as per laid down procedure. Under this act, wild animals have been categorized into V schedules and those animals which are included in schedule I, II and III received the privilege of stringent protection.

The wild animals included in the schedule are permitted to be eliminated if they become threat to or cause damage to life or property. Whereas, only vermin included in scheduled V were excluded from strict protection.

Hunting of young and female of any wild animal other than vermin is strictly prohibited unless permitted (Sec.15). The persons who possess any wild animal trophies are required to declare in a specified proforma under the provisions of this act. The Government of India specified vide letter Dt. 18th Sept 1975 that, the management authorities are vested with the control over the tanks and rivers in National Parks and Sanctuaries.

The delegation of powers and duties of the Chief Wild Life Warden to the Police Sub Inspector for the purpose of Sec. 41 (1) and Sec. 55 of the Wild Life (Protection) Act 1972 was granted by G.R. No. WLP-1973/197578 –F-1, Dt. April 5, 1976. The schedules are revised by the Government from time to time as it was

required under Sec. 61 of the Wild Life (Protection) Act 1972. The Government of Maharashtra framed rules under Sec. 64 of Wild Life (Protection) Act 1972 vide its letter No. WLP- 1679/95507 / F-5.

The Wild Life (Protection) Act was again amended hereinafter called as “Wild Life (Protection) Amendment Act 1986” and became effective since November 25, 1986. Under Sec. 44 of the Wild Life (Protection) Act 1972 the Government vide letter No/WLP/1682/100208/CR-43(1)/F-5 permitted the trapping of Cobra and Russell’s viper by a licensed dealer for the purpose of extracting venom. Under the power conferred under sub Sec. (1) and sub Section (2) of the Section 64, the Government of India vide letter No. WLP/1682/10020 (iii)/F-5 framed the new rules called “Wild Life (Frog Leg Industry) Rules 1987” and it came into force from November 25, 1987. The Government of India vide letter No. F. no. 1-2/91/WL/I, Dt. October 21, 1991 further amended the Wild Life (Protection) Act, 1972. Subsequently Wild Plants have been brought under the provisions of this act. The zoo and circus have been defined and included in this act whereas the game reserves have been completely dropped. A total ban has been imposed on hunting of wild animals specified in schedule II, III, IV and I except as provided under Section 11 and 12 by amending Section 9 of Wild Life (Protection) Act, 1972.

In 2003 compressive amendment was made to impose heavy penalty and stringent punishment in case of wildlife offences. Under the provisions of Section 17 of Wild Life (Protection) Act, the following acts are prohibited

1. Hunting of wild animals from or by means of wheeled or mechanically propelled vehicles in water or on land or by air craft.
2. Use of mechanically propelled vehicles for the purpose of stampeding any wild animals.
3. Use of chemicals, explosives, pit falls, poisons, poisoned weapons, snares or traps except related to capture of wild animals under wild animal trapping license.
4. Hunting of special game or big game other than with a rifle unless specially authorized by the licensee.

5. Setting fire to vegetation for the purpose of hunting, using artificial light for the purpose of hunting except when specially authorized to do so under license in the case of carnivore over a kill. Hunting during night time except when specially authorized.
6. Hunting of any animals on water hole or a salt-lick or other drinking places or on path or approaches to the path except water birds or sand goose.
7. Hunting of any wild animals on any land not owned by the Government without the consent of the owner or his agent.

The Act was further amended in 2022 to increase the number of species protected under the law, rationalize the schedules, and to implement the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), among others.

3.8.3 MEASURES ADOPTED FOR PROTECTION OF WILDLIFE

Apart from regular patrolling of poaching sensitive beats, awareness generation, soil and moisture conservation works which include construction of nalla bund, check dams to augment the water source, no felling of trees along the nalla and water sources, identification of sites of seasonal water sources, development of new water holes have been taken up in the division.

3.8.4 OTHER METHODS ADOPTED FOR PROTECTING WILDLIFE

Apart from legal methods under the Wild Life (Protection) Act, 1972 the following measures have been introduced to protect wildlife from time to time.

3.8.4.1 COMPENSATION FOR THE LOSS OF LIVESTOCK

The scheme, which was introduced for the first time in 1971, covers the loss of Cow, Buffalo, Bullock, Sheep, Goat and other livestock (as per definition given under Section 2(1 SA)) due to attack of a Tiger, Panther or any other wild animal. The present rates of compensation as per the GR No.WLP-0718/C.No.267/F-1 of 23/08/2022 are as follows and compensation is to be paid within three months.

TABLE NO.3.7 THE PRESENT RATES OF COMPENSATION FOR LIVESTOCK

Sr.No.	Particulars	Compensation to be paid
(1)	(2)	(3)
1	Cow, Buffalo, Bullock	75% of the market price or Rs.70000/- whichever is less;
2	Sheep, Goat, other livestock	75% of the market price or Rs.15000/- whichever is less;
3	Cow, Buffalo, Bullock become permanently handicapped	50% of the market price or Rs.15000/- and whichever is less;
4	Injury to Cow, Buffalo, Bullock, Goat	Treatment cost. (Govt. or ZP Hospital) 25% of the market price or Rs.5000/- whichever is less.

The compensation to livestock damage has to be given as per the terms and condition mentioned in the GR No.WLP-1008/C.No.270/F-1 of 02/07/2010. Some of the conditions to be fulfilled are as under:

- i. Death to be reported within 48 hours.
- ii. Carcass is not to be removed before case is made.
- iii. No death of any wild animal within 10 km radius area in the next 6 days.
- iv. Immediate investigation by forest officers as to the wild animal, which killed the cattle as well as likely amount of compensation.
- v. Compensation to be sanctioned by an officer not below ACF.
- vi. No compensation in case the livestock was grazing illegally.

3.8.4.2 COMPENSATION FOR THE INJURY TO AND LOSS OF HUMAN LIFE

Introduced through GR dated 27.1.1986, the scheme covers death as well as injury including minor injury caused to any individual in an attack by a wild animal.

Any such attack by Tiger, Panther, South Bear, Gaur, Wild Pig, Wolf, Hyena, Jackal and Wild Dogs is covered under the scheme. Present rates of compensation have been fixed through Govt. Resolution No.WLP-0718/C.No.267/F-I, dt.23/08/2022. These are as follows:

TABLE NO. 3.8: COMPENSATION FOR THE INJURY AND LOSS OF HUMAN LIFE

Sr. No.	Particulars	Amount to be Paid
(1)	(2)	(3)
1	Death	Rs.20.00 lakhs.
2	Permanent disability.	Rs.5.00 lakhs.
3	Major injury	Rs.1.25 Lakh.
4	Minor injury	Upto Rs.20,000/-

The compensation to injury & loss human life has to be given as per the terms and condition mentioned in the Govt. Resolution No.WLP-1008/C.No.270/F-I, dated 02/07/2010 and Govt. Resolution No.WLP-2012/C.No.337 /F-I, dated 30/03/2013 and 16/1/2015. Some of the conditions for claiming and deciding above compensation are as under.

- i. Such attack should not have occurred when the individual was indulging in violating the Wildlife (Protection) Act, 1972.
- ii. Relative/friend should report the attack within 36 hours.
- iii. Police/forest officer to investigate within 3 days.
- iv. Death/injury due to wild animal is to be certified by the govt. medical officer.
- v. Compensation due to death is to be given only to legal heir and compensation due to injury is to be given to individual concerned.
- vi. Compensation is to be sanctioned by the officer not below the rank of DCF/DFO.

3.4.8.3 COMPENSATION FOR CROP DAMAGE

Introduced vide GR No. WLP/1008/C.No.-270/F-1 dated July 2, 2010, it provides for compensating losses to the agricultural crops due to wild animals. A compensation of minimum Rs.700/- per hectare is paid to the farmers subject to maximum of Rs.18000/-. Now by GR No.WLP-2012/C.No.326/F-1, Dated 09.07.2015 and GR No.WLP-2012/C.No.326/F-1, Dated 23.12.2015 damage to agricultural crops and Fruit Trees (Orchard) by Wild Pig, Deer, Bison, Nilgai, Monkey and Elephant is covered. The present rate of compensation have been fixed as per GRs Dated 09/07/2015 and 23/12/2015. The details are given below.

TABLE NO.3.9: RATES OF COMPENSATION FOR AGRICULTURAL CROPS

Sr.No.	Details	Compensation to be Paid
(1)	(2)	(3)
1	Crop damage up to Rs.10000/-	Whole amount but minimum Rs. 1000/-
2	Crop damage above Rs.10000/-	Rs.10000/- plus 80% of above amount, but maximum Rs.25000/-
3	Sugar cane damage	Rs.800/- per metric tone, maximum Rs.25000/-

TABLE NO.3.10: RATES OF COMPENSATION FOR HORTICULTURAL CROPS

Sr.No.	Details	Compensation to be Paid
(1)	(2)	(3)
1	Coconut	Rs.4800/- Per Tree
2	Nut (Supari)	Rs.2800/- Per Tree
3	Mango	Rs.3600/- Per Tree
4	Banana	Rs.120/- Per Tree
5	Orange / Mosambi	Rs.2400/- Per Tree
6	Other Fruit Trees	Rs.500/- Per Tree

The details of year wise compensation paid to human beings due to attack by wild animals is given in **Appendix No.VIII**. An abstract is provided below.



TABLE NO. 3.11: DETAILS OF COMPENSATION PAID

Sr. No.	Year	No. of Persons Attacked by Wild Animals	Amount of Compensation (Rs.)
(1)	(2)	(3)	(4)
1	2010-2011	1	7,500
2	2011-2012	10	30,058
3	2012-2013	4	1,07,203
4	2013-2014	12	1,44,584
5	2014-2015	7	8,26,048
6	2015-2016	29	12,60,666
7	2016-2017	8	3,38,714
8	2017-2018	41	28,98,792
9	2018-2019	31	24,95,706
10	2019-2020	24	64,31,607
11	2020-2021	5	1,19,983
Total		172	1,46,60,861

3.8.5 RIGHTS AND CONCESSIONS

No specific rights have been provided over wildlife in this Division. The Chief Wildlife Warden can grant the permits for special purposes of education, scientific research and collection of specimen for recognized zoos, museums and scientific institutions.

CHAPTER - 4

MAINTENANCE AND ENHANCEMENT OF FOREST HEALTH AND VITALITY

4.1 STATUS OF REGENERATION

Regeneration in the context of forests refers to the natural or intentional process of renewal and regrowth of trees and vegetation in a forest ecosystem. Ensuring successful forest regeneration is crucial for the long-term conservation and resilience of our forest ecosystems, promoting a sustainable future for both nature and society.

Data on regeneration status was collected by SOFR unit Amravati along with staff of Yavatmal territorial division during collection of enumeration data between May 2022 and December 2022. The seedlings were enumerated in the following three categories as R1 upto 1 m height, R2 with 1 to 2 m height and R3 above 3 m height. The data is analysed and used to devise prescriptions for natural and artificial regeneration of forest areas. The natural regeneration of teak and its associates is overall poor and restricted to a few patches of selected sites. Whatever regeneration occurs in the rainy season, fails to establish owing to climatic as well as biotic factors. Heavy grazing, fire incidences, trampling due to cattle movement, human population pressure to meet their demands like firewood and small timber, poor site quality and erratic rainfall are major factors that influence the establishment of regeneration in this forest area. The regeneration data shows that there are 13.59 seedlings of upto 1 m height, 5.42 seedlings between 1 to 2 m height and 3.4 seedlings above 3 m height in a hectare in these forests. The weighted average of the total number of seedlings in the division is 22.41/ha. Range-wise details of regeneration are given below:

TABLE NO.4.1: REGENERATION STATUS

Sr. No.	Range	No. of Sample Plots	No of Teak Seedlings/ha			Total (4+5+6)
			R1	R2	R3	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	North Arni	218	9.44	4.58	3.26	17.28
2	Yavatmal	180	10.28	6.76	5.28	22.31
3	Wadgaon	142	52.50	15.42	6.19	74.11
4	South Arni	191	17.43	6.60	2.94	26.97
5	Ner	162	0.01	0.01	0.60	0.62
6	Jodmoha	242	5.50	3.30	4.30	13.10
7	Hiwari	236	12.43	5.71	3.07	21.21
8	Darwha	333	1.12	1.00	1.58	3.70
	Weighted Average		13.59	5.42	3.40	22.41

4.2 AREA AFFECTED BY FOREST FIRE

Forest fires are a significant concern for ecosystems worldwide. They can have both short-term and long-term impacts on forests and their inhabitants. Immediate effects include the destruction of vegetation, including trees, shrubs, and ground cover, which disrupts the ecological balance and reduces habitat for wildlife. The loss of vegetation also leads to soil erosion and degradation. Forest fires can also release large amounts of carbon dioxide into the atmosphere, contributing to greenhouse gas emissions and exacerbating climate change. Additionally, fires can cause the loss of valuable timber resources and disrupt local economies that rely on forestry.

Yavatmal Forest Division is susceptible to fires due to its deciduous nature and dry climate. Forest fires occur primarily during the dry season, which lasts from February to June. **Appendix No. IX** provides further details on forest fires in the area. During this period, the forests are highly vulnerable to fires, although those occurring at the end of winter and the beginning of summer are less destructive. Most of the fires in these forests are man-made, negatively impacting natural regeneration. The combustible



leaf litter and undergrowth quickly catch fire and spread. Damage is severe when recently felled material is present, particularly in plantations. Young regeneration, including teak and other species, often suffer damage or die due to fire. Fires in the area can be started by grazers, intentionally or unintentionally, as well as by villagers engaging in farm bund burning during the cultivation season. Late fires in grassy areas or closed coupes can result in catastrophic fire events. Generally, the fires in this region are ground fires that spread slowly. Repeated fires during the dry season in this arid zone cause significant harm to tree growth and reproduction. Forest fires cause extensive damage to forests, including forest growth, regeneration, ground flora, soil micro-organisms, and soil productivity. The affected area by forest fires is provided in the table below.

TABLE NO. 4.2: INCIDENCE OF FIRE

Sr. No.	Year	No. of Incidents	Area (Ha)	Area Impacted (Ha) per Fire Incident (4/3)
(1)	(2)	(3)	(4)	(5)
1	2011-12	22	227.50	10.34
2	2012-13	8	44.00	5.50
3	2013-14	17	135.50	7.97
4	2014-15	31	132.95	4.29
5	2015-16	92	459.54	5.00
6	2016-17	69	379.99	5.51
7	2017-18	120	519.53	4.33
8	2018-19	85	298.65	3.51
9	2019-20	60	226.18	3.77
10	2020-21	110	346.43	3.15
11	2021-22	32	88.05	2.75
	Total	646	2858.32	4.42

4.3 AREA DAMAGED BY NATURAL CALAMITIES

DROUGHT: Drought has detrimental effects on forests, including reduced growth and productivity, increased tree mortality, altered forest composition, heightened

susceptibility to pests and wildfires, soil degradation, and impacts on wildlife. Though no direct impact was observed, reduced and erratic rainfall often impacts the young saplings.

FROST: Injury due to frost is not observed in this Division.

WIND STORMS: No considerable damage is noticed due to wind storms in this Division.

SOIL EROSION: Soil erosion is noticed in this area especially along the streams. Steep slopes in undulating areas enhance soil erosion. Sheet erosion is common in the entire area. Gully formation takes place due to erosion along the river banks. In some of the areas the roots of trees are exposed due to excessive erosion of soil leading to windfall of trees.

4.4 AREA PROTECTED FROM GRAZING

Unregulated grazing by domestic animals has detrimental effects on forests, including the destruction of young regeneration and plantations due to trampling and excessive movement of cattle. This results in soil compaction and reduced soil porosity, making it less favorable for the establishment of new growth. Grazing is particularly prevalent in forest areas near villages, and continuous, uncontrolled grazing negatively impacts tree growth and regeneration. Forests can thrive in areas with regulated or no grazing, but excessive grazing beyond the carrying capacity of the forests causes significant damage. Grazing patterns vary, with higher pressure during the dry season from February to June, when the forests become dry. Some grazers even resort to lopping trees for cattle feed. Although sheep and goats are not allowed to graze in timber production forests, grazing by these animals still occurs in the region, further impacting the forests.

4.5 LOPPING PRACTICES

The practice of lopping, which involves cutting branches or foliage from trees, can have negative impacts on forest health. Lopping can lead to tree stress, making them more vulnerable to diseases and pests. It can also disrupt the natural growth

pattern of trees and hinder their ability to regenerate. Additionally, excessive lopping can reduce the overall canopy cover, affecting the microclimate and biodiversity within the forest. Lopping is seen mostly in forest areas adjacent to the villages. Grazers also do lopping while grazing their cattle.

4.6 AREA INFESTED BY INVASIVE WEED SPECIES IN FORESTS

Invasive weed species pose significant damage to forest health. Their rapid spread often outcompetes native plants, reducing biodiversity and altering ecosystem dynamics. Lantana (*Lantana camara*) is a commonly observed invasive weed throughout the forest area in this division. It forms thick mats that prevent the growth of understory plants, affecting the natural regeneration of tree species. It also inhibits the recruitment of native seedlings and disrupts nutrient cycling processes. Moreover, lantana's foliage contains toxins that deter herbivores, further impacting the food chain. Similarly, Rantulsi (*Mesosphaerum suaveolens*) is also seen infesting the forest floor. Damage by climbers mostly confined to the forests along the water streams bank and along the nala banks is noticed in this area. Chilati (*Acacia pinnata*) and Iruni (*Zizyphus oenoplia*) are the main climbers which cause harm to the forest in this area.

4.7 INCIDENCES OF PEST AND DISEASES

In this area teak skeletonizer (*Eutectona machaeralis*) and teak defoliator (*Hyblaea puera*) are common. The insect attack is noticed mostly during the rainy season.

4.8 FOREST DEGRADATION AND ITS DRIVERS

The forests of Yavatmal forest division mostly suffer from unregulated grazing, illicit felling, encroachments and repeated fires significant damage caused by these agencies coupled with erratic rainfall. The other agencies which caused injury to the forests such as droughts, frost, floods, plants and insects are negligible.

ILLICIT FELLING: Illicit felling undermines the resilience and long-term sustainability of forests, posing a significant threat to their health and the multitude of benefits

they provide to both humans and the environment. It leads to the loss of valuable tree species, disrupting the natural balance and composition of the forest. The removal of trees also results in the destruction of habitats for countless plant and animal species, leading to a decline in biodiversity. Additionally, illegal logging contributes to deforestation, which reduces the forest's ability to sequester carbon dioxide and mitigates climate change. It also degrades soil quality, increases the risk of erosion and negatively affects water resources.

In Yavatmal forest division, illicit felling is a common occurrence. People within the district and from adjoining areas indulge in illicit felling in areas where the good quality teak forests are available. Incidences of people coming in groups for cutting teak timber are also noticed. Local people in and around the forest area of the division may indulge in illicit felling for meeting their domestic needs such as requirement of fuel, small timber, firewood as there is a huge gap between demand and supply of forest produce. People generally indulge in illicit felling due to unemployment, higher prices of some of the forest products in the market like Teak. These social causes make people indulge in illicit felling. Lopping of trees and shrubs for rab burning of fields has further deteriorated the situation. In general, illicit felling, lopping and pollarding of forest species have further deteriorated the forest crop in terms of quality and quantity of the forests.

However, over the past decade the cases of illicit felling have steadily declined, probably owing to the increasing per capita income in the rural areas.

TABLE NO. 4.3 LIST OF OFFENCE CASES

Year	Fire	Grazing	Illicit felling	Others	Total (2+3+4+5)
(1)	(2)	(3)	(4)	(5)	(6)
2011-2012	22	0	399	29	450
2012-2013	8	18	644	54	724
2013-2014	17	10	815	46	888
2014-2015	31	0	830	10	871
2015-2016	92	11	565	14	682

Year	Fire	Grazing	Illicit felling	Others	Total (2+3+4+5)
(1)	(2)	(3)	(4)	(5)	(6)
2016-2017	69	0	577	0	646
2017-2018	120	2	482	159	763
2018-2019	85	2	471	28	586
2019-2020	60	2	313	68	443
2020-2021	110	3	345	10	468
2021-2022	32	7	239	47	325
Total	646	55	5680	465	6846

ENCROACHMENTS: In this particular region, encroachment is not a major issue. However, neighboring forest areas that border agricultural fields are experiencing encroachment, particularly during the monsoon season. Certain forested areas have been cleared, stripped of vegetation, and converted for agricultural use. The total extent of encroached land in the division amounts to 245.93 hectares. More specific information on the encroached areas can be found in **Appendix No. XLVII (A)** and **Appendix No. XLVII (B)**.



DAMAGE BY WILD ANIMALS: The young regeneration in this area is significantly affected by grazing from Nilgai, Black buck, and Chital. Additionally, wild pigs, hares, and porcupines cause damage in plantations. Wild pigs primarily damage bamboo plantations in their early stages, while porcupines feed on rhizomes and bark near the base of trees, hindering their proper establishment. Monkeys are responsible for considerable damage to flowers and fruits of trees. Chital, on the other hand, damage the bark of Shiwan trees at the base, leading to girdling and eventual tree death. Although the damage caused by wild animals is not as severe as that caused by domestic animals, their presence plays a compensatory role by promoting regeneration and maintaining forest health through selective tree removal and biodiversity preservation.

MINING: Mining is prohibited in the forest area. There is no report of illegal mining/quarrying in the forest area. However, illegal river sand mining is often reported from the major rivers in the Division.

4.9 POLLUTION CONTROL AND PROTECTION OF ENVIRONMENT

Environmental pollution has significant impacts on forests, jeopardizing their health and sustainability. Air pollution, primarily caused by industrial emissions and vehicle exhaust, can lead to the deposition of harmful substances onto tree leaves and soil, hindering photosynthesis and nutrient uptake. This weakens the overall vitality of trees and makes them more susceptible to diseases, pests, and premature death. Water pollution, resulting from the discharge of pollutants into water bodies, can contaminate forest ecosystems and disrupt aquatic life. Soil pollution, often caused by improper waste disposal or the use of chemical fertilizers and pesticides, can alter soil composition, reduce nutrient availability, and harm soil organisms essential for nutrient cycling. Additionally, pollution contributes to climate change, causing shifts in temperature and precipitation patterns that can negatively affect forest growth and alter species distribution.

Though there is no recorded evidence of severe pollution in forest areas of Yavatmal division, incidences of water pollution due to heavy usage of fertilizers for agricultural crops in fields adjacent to forest areas are noticed. Air pollution occurs due to vehicular traffic on roads and brick kilns operating in the areas adjacent to forest areas.

CHAPTER – 5

CONSERVATION AND MAINTENANCE OF SOIL AND WATER RESOURCES

5.1 AREA TREATED UNDER SOIL AND WATER CONSERVATION MEASURES

Soil conservation refers to the measures and practices which protect the soil against loss and help in maintaining its fertility with a view to establishing sustainable forestry.

5.1.1 SOIL CONSERVATION

Soil conservation is based on certain basic principles, which include:

- Protection of soil from impact of rain drops.
- To slow down the water from concentrating and moving down the slope in a narrow path.
- To slow down the water movement when it flows along the slope.
- To grow the strips of stubble or other vegetation cover to hold the moving particles of soil.
- To increase the size of soil particles.

5.1.2 WATER CONSERVATION

Considering how little water is actually available for use, conservation of water and efficient management of water sources are more critical than ever before. Sustainable water conservation is carried out by the following methods.

- Construction of dams and water reservoirs to control floods, ensure year around supply of water and generation of electricity.
- Building of small reservoirs wherever possible.

- Developing small catchment dams and protecting wetlands.
- Diversion of water bodies through canals to increase water supply in drier areas.
- Regular dredging and desiltation of rivers, streams and other water bodies.

Soil and moisture conservation works need to be carried out on watershed basis as forests are customarily at the top of a watershed. Good forest management secures water at its source. Appropriate forest management strategies produce clean and abundant water for our watersheds, as well as healthy forests.

Trees and forests perform an incredible role in reducing stormwater in several ways and removing or filtering pollutants that would otherwise wind up in our waterways. Forests filter and regulate the flow of water, in large part due to their leafy canopy that intercepts rainfall, slowing its fall to the ground and the forest floor, which acts like an enormous sponge, before gradually releasing it to natural channels and recharging ground water.

5.1.3 WATERSHED

A watershed comprises an area of land that conveys all the water running under it and drains it into a body of water. It combines with other watersheds to form a network of rivers and streams that progressively drain into larger water areas.

The topography of any region may be subdivided into several ecological units, each of which drains to a common point. Each such ecological unit is referred to as watershed. Strictly speaking, the higher land that separates each such unit is called a watershed and the unit itself being termed as the catchment area. The size of a watershed may vary from a few hectares to thousands of square kilometres.

Watershed management is the rational utilization of land and water resources for gaining optimum production and with minimum hazards to natural resources. It essentially relates to the practice of soil and water conservation in the

watershed, which means proper land use, protecting land against all forms of deterioration, building and maintaining soil fertility, conserving water for farm use, proper management of local water for drainage, flood protection and sediment reduction and increasing productivity from all prevailing land uses. The principal factors influencing watershed operations are -

A) PHYSIOGRAPHY: It includes the following aspects:

- a. **SIZE:** Both runoff volume and runoff rate increases with the watershed size. However, both the rate and the volume per unit of watershed decrease with an increase in its area. The size of the watershed is thus an important parameter in determining the peak rate of runoff.
- b. **SHAPE:** Elongated and narrow watersheds are likely to have more extended time of concentration resulting in the lower runoff rates as compared to the square shaped watersheds of the identical size. The time of concentration equally affects the amount of water that will eventually infiltrate into the soil in the watershed.
- c. **LAND SLOPE:** Slope in addition provides a significant implication for the land use. The speed and extent of runoff depend on the slope of the land. The greater the slope, greater will be the velocity of flow of the runoff water.
- d. **DRAINAGE DENSITY AND PATTERN:** The drainage density equally affects the runoff pattern and intensity. High drainage density drains runoff water rapidly, decreases the lag time and also increases the peak of hydrograph. $\text{Drainage density} = \frac{\text{total length of all stream (km)}}{\text{catchment area (km}^2\text{)}}$.
- e. **SOILS AND GEOLOGY:** The soil and the geology of the watershed determine the amount of percolating water and also governed by the corrective measures, which may be taken for improvement.

B) VEGETATIVE COVER: The type and quality of vegetative cover on watershed land have a substantial influence on runoff, infiltration rate, erosion and sediment production and also on the rate of evaporation. A dense cover of vegetation is a most powerful tool for reducing erosion.

C) PEAK RUNOFF: The runoff generates from rainfall excess drains through the channels of different order and finally reaches the watershed outlet. The flow at outlet starts with minimum flow called base flow (sometimes its value is zero) and attains the maximum flow after some time and then recedes to base flow again. This time variation of flow is called hydrograph. The maximum flow at outlet thus attained is called peak flow of runoff.

D) PRECIPITATION: The amount and nature of precipitation are the most important factors, which determine what will happen in a watershed. Rainfall evenly distributed throughout the year has a different impact as compared to sudden, sharp showers or seasonal rainfall.

Watershed management approach viz. the ridge-to-valley approach for carrying out soil and moisture conservation works is adopted. In Yavatmal Forest Division over the past ten years various soil and moisture conservation measures have been undertaken under various schemes. The details are provided in **Appendix No. XI**.



5.1.4 SOIL EROSION: Soil erosion adversely affects the fertility status and land use. National Bureau of Soil Science and Land-Use Planning has grouped the soils of Yavatmal into different erosion classes. The soils of the total geographical area of the division have been grouped into different erosion classes, their areal extent and expected soil loss is given below:

TABLE NO. 5.1: DIFFERENT SOIL EROSION CLASSES

Erosion class	Area		Expected soil loss (tonnes/ha/year)
	Ha	(%) TGA	
(1)	(2)	(3)	(4)
Slight	2,53,842	53 %	5-10
Moderate	1,68,891	35 %	10-15
Severe	48,235	10 %	15-20
Water bodies	6,952	1 %	-

Sheet erosion is noticed all over the forest areas of the division. The top layers of soil which store organic matter and nutrients, on which plants feed, are lost in this process. It decreases soil fertility, lowers sub-soil water level and water holding capacity of the soil.

The exact area treated under soil conservation cannot be assessed as no special work for soil conservation alone is carried out but SMC works form part of the plantations works. In Yavatmal Division, during the past 10 years 6213 ha. has been taken up for plantation and can safely be presumed that this area is treated for soil conservation.

TABLE NO. 5.2: SOIL AND MOISTURE CONSERVATION WORKS

Sr. No.	Range	Year	Soil & Moisture Conservation Work								
			CCT	Deep CCT	LBS	Gabion Struture	Mati Nala Bandh	CNB	Water Storage Tank	Nala Deepening & wide-ning	De-siltation
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	Darwha	2016-17	7	0	4	0	1	0	15	0	1
		2017-18	19	1	0	10	4	0	23	0	0
		2018-19	9	7	0	25	0	0	16	0	0
2	Jodmoha	2013-14	0	0	2	0	2	0	22	0	0
		2015-16	1	0	24	2	0	0	18	0	0
		2016-17	10	0	10	33	0	0	20	10	0
		2017-18	2	6	0	24	0	0	16	5	0
		2018-19	3	0	0	52	0	0	14	1	0
		2020-21	0	0	0	0	0	0	4	0	0
3	Hiwari	2011-12	7	54	0	0	12	0	25	0	0
		2012-13	0	1	0	0	3	0	6	0	0
		2013-14	2	0	2	0	26	0	11	0	0
		2014-15	19	0	0	0	7	0	5	0	0
		2015-16	0	0	14	33	0	0	0	1	0
		2016-17	9	0	3	25	0	0	14	0	0
		2017-18	6	1	0	45	0	0	11	0	0
		2018-19	5	3	0	20	0	0	3	0	0
		2021-22	7	0	0	0	6	0	4	0	1

Sr. No.	Range	Year	Soil & Moisture Conservation Work								
			CCT	Deep CCT	LBS	Gabion Struture	Mati Nala Bandh	CNB	Water Storage Tank	Nala Deepening & wide-ning	De-siltation
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
4	North Arni	2011-12	0	0	0	0	11	0	4	0	2
		2012-13	0	0	0	0	5	0	8	0	1
		2015-16	5	3	0	0	0	0	12	0	0
		2016-17	18	12	2	11	4	0	12	0	1
		2017-18	0	1	0	7	0	0	5	0	0
		2018-19	3	0	0	2	0	0	2	0	0
		2020-21	0	0	0	0	0	4	7	0	0
		2021-22	0	0	0	0	0	3	5	0	0
5	South Arni	2015-16	5	0	0	0	0	0	4	0	0
		2016-17	7	0	5	25	3	0	4	0	0
		2017-18	0	2	0	0	0	0	1	0	0
		2018-19	2	0	0	9	0	0	4	0	0
6	Wadgaon	2015-16	1	0	0	4	0	0	11	0	0
		2017-18	5	3	0	0	4	0	6	0	0
		2018-19	3	1	0	0	0	0	6	0	0
7	Yavatmal	2015-16	7	2	0	24	0	0	12	15	0
		2016-17	2	0	3	12	0	0	5	0	0
		2017-18	3	4	0	25	4	0	12	0	0
		2018-19	3	0	0	15	2	0	3	0	0
8	Ner	2015-16	1	0	0	0	0	0	1	0	0
		2016-17	3	5	2	16	0	0	13	0	0
		2017-18	0	13	0	0	0	0	17	0	0
		2018-19	0	10	0	15	0	0	19	0	0
		Grand Total	174	129	71	434	94	7	400	32	6

5.2 DURATION OF WATER FLOW IN THE SELECTED SEASONAL STREAMS

River Painganga and its tributaries Pus, Arunavati and Adan, and Wagadhi along with the river Wardha with its tributary Bembla, Nirguda drains the entire area. Painganga and Wardha are perennial sources of water. There are other small rivers and nalas from forests that have water in their streams till the month of December. There are one major, two medium and 18 minor irrigation projects which form the major source of irrigation. Many areas feel the shortage of water during summer. Erratic rainfall further worsens the situation.

5.3 WETLANDS IN FOREST AREAS

Wetlands are unique and valuable ecosystems that are characterized by the presence of water, either permanently or seasonally. They serve as a transitional zone between terrestrial and aquatic environments, supporting a rich array of plant and animal species. Wetlands play a crucial role in maintaining the health of the environment and providing various ecosystem services. They act as natural filters, purifying water by trapping sediments and removing pollutants. Wetlands also serve as vital habitats for a wide range of organisms, including migratory birds, fish, amphibians, and invertebrates. They provide breeding grounds, nesting sites, and food sources, contributing to the overall biodiversity of the surrounding areas. Additionally, wetlands help in flood control by absorbing and storing excess water during heavy rains or storms, reducing the risk of downstream flooding. Despite their importance, wetlands face significant threats from human activities, such as drainage for agriculture, urban development, and pollution.

As per National Wetland Atlas, Yavatmal district has a total of 797 wetlands are mapped including 212 small wetlands (< 2.25 ha) with 34,192 ha area. The district is dominated by manmade wetland types. Reservoir/barrage is the major wetland type. There are 7 Reservoir/barrage mapped with 13,250 ha area (38.75%). There are 440 Tank/pond mapped with 33.10% area. Rivers/streams occupy 27.53 % area. Aquatic vegetation is slightly more during pre monsoon (2936 ha) than during post monsoon (812 ha). Open water spread of the wetlands is significantly higher in post monsoon (32303 ha) than during pre monsoon (13786 ha), indicating the rainfall dependence of the wetlands in the state, particularly the dryness of rivers is very prominent.

CASE STUDY OF BORGAON WETLAND: In 1993, the Government of Maharashtra constructed the Borgaon Dam as an irrigation project. Situated over a local Nallah River, this dam has resulted in the creation of a wetland that has become a magnet for numerous waterfowl species. During the summer months, particularly in the western and southern regions, as the water levels recede, the wetland transforms into ideal breeding grounds with wetlands, grasslands, and rocky

areas. Over the years, several migratory and local waterfowl species have been recorded breeding at the Borgaon Dam, including the Little Tern, Black Winged Stilt, Kentish Plover, Little Ring Plover, Small Pratincole, River Tern, Great Thick-knee, Red Wattled Lapwing, and Yellow Wattled Lapwing. Unfortunately, the breeding areas are facing destruction due to increased anthropogenic activities such as soil excavation, siltation, grazing of cattle, and the free movement of stray dogs. As a result, the presence of these birds has been declining annually. To address this issue, it is imperative to implement corrective measures in collaboration with the revenue department to improve the situation and protect the breeding habitats of these waterfowl species.



Image 5.1 : A 13/02/2022 satellite image screenshot of Borgaon Reservoir along with the adjacent forest and agricultural lands.

It is crucial to protect and conserve wetland areas to preserve their ecological value and the benefits they provide to both nature and society. Therefore, all the major wetlands in the division should be mapped and documented on priority and should be monitored regularly.

5.4 WATER LEVEL IN THE WELLS IN THE VICINITY (UP TO 5 Km) OF FOREST AREA

Ground water level is one of the basic data-element which reflects the ground water regime in an area. Central Ground Water Board (CGWB) monitors, ground water levels four times a year during January, April/May, August and

November through a network of observation wells spread throughout the country. The primary objective of monitoring the ground water level is to record the response of ground water regime to the natural and anthropogenic stresses of recharge and discharge parameters with reference to geology, climate, physiography, land use pattern and hydrologic characteristics. Natural conditions affecting the regime include climatic parameters like rainfall, evapotranspiration etc., whereas anthropogenic influences include pumpage from the aquifer, recharge due to irrigation systems and other practices like waste disposal etc. the details of water level data of six talukas in Yavatmal Forest Division is given in the table below.

**Table No. 5.3: WATER LEVEL DATA (2022) WITH LONG TERM DATA TREND
(2011-2022)**

Sr. No.	Taluka	Annual Ground water Recharge (ham)	Annual Extrac-table Ground water Resource (ham)	Ground Water Extraction for all uses (ham)				Stage of Ground Water Extraction (%)	Categori-zation on of Assess-ment Unit	Allocation of Ground Water Resource for Domestic Utilisation for projected year 2025 (ham)	Net Annual Ground Water Availa-bility for Future Use (ham)	Total Ground Water Availa-bility in the area (ham)
				Dom-estic	Indu-strial	Irrig-ation	Total					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	Arni	8470	8036	446	0	2535	2981	37	Safe	446	5055	3156
2	Babhulgaon	5627	5344	562	0	1745	2307	43	Safe	562	3037	311
3	Darwha	8203	7745	603	0	2901	3505	45	Safe	603	4240	1087
4	Kalamb	6293	5959	427	0	1922	2348	39	Safe	427	3610	621
5	Ner	5410	5137	537	0	2259	2795	54	Safe	537	2342	303
6	Yavatmal	9609	9112	782	0	2844	3626	40	Safe	782	5487	2367

5.5 STATUS OF AQUIFERS

Various rock formations with different hydrogeological characteristics act as distinct aquifer systems of varying dimensions.

Regarding the status of aquifers, GSDA, Pune and CGWB, Central Region Nagpur have reported in 2011. The details of nature and yield potential of aquifers of six talukas in Yavatmal forest division are given in the table below:

TABLE NO. 5.4: NATURE AND YIELD POTENTIAL OF AQUIFERS

Sr. No	District	Taluka	Main Aquifer	Yield Potential	Type of Wells Suitable
(1)	(2)	(3)	(4)	(5)	(6)
1	Yavatmal	Arni	Weathered Basalt	50-100 LPM	Dugwell, Borewell
2	Yavatmal	Babhulgaon	Weathered Basalt	50-100 LPM	Dugwell, Borewell
3	Yavatmal	Darwha	Weathered Basalt	50-100 LPM	Dugwell, Borewell
4	Yavatmal	Kalamb	Weathered Basalt, Local Alluvium	50-100 LPM	Dugwell, Borewell
5	Yavatmal	Ner	Weathered Basalt	50-100 LPM	Dugwell, Borewell
6	Yavatmal	Yavatmal	Weathered Basalt	50-100 LPM	Dugwell, Borewell

CHAPTER – 6

MAINTENANCE AND ENHANCEMENT OF FOREST RESOURCE PRODUCTIVITY

6.1 GROWING STOCK OF WOOD

The enumeration of Yavatmal Division was carried out by SOFR unit of Amaravati Working plan Division during 2022-23. It demonstrated that growing stock has decreased in comparison to the previous enumeration.

TABLE NO. 6.1: WORKING CIRCLE WISE GROWING STOCK COMPARISON

Sr. No.	Working Circle	No. of Trees per Ha.		Change in % [(3-4/3)*100]
		Previous Enumeration (2007-2008)	Current Enumeration (2022-23)	
(1)	(2)	(3)	(4)	(5)
1	Selection-cum Improvement	389.08	319.43	-17.90
2	Improvement	356.80	331.48	-7.10
3	Afforestation	150.37	120.03	-20.18
4	Fodder Improvement	189.88	202.24	6.51

**TABLE NO. 6.2: GROWING STOCK (TREES/HA) OF SCI WC OVER THE PAST THREE
ENUMERATIONS**

Girth Class (cm)	Yadav's Plan (1998)			Rao's Plan (2008)			Current Plan (2022)		
	Teak	Non Teak	Total (2+3)	Teak	Non Teak	Total (5+6)	Teak	Non Teak	Total (8+9)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
15-30	79.6	38.32	117.92	60.92	66.91	127.83	32.55	34.94	67.49
30-45	85.85	21.38	107.23	64.9	49.67	114.57	45.32	28.39	73.71
45-60	58.99	21.04	80.03	56.79	33.22	90.01	48.54	18.90	67.44
60-75	38.61	16.74	55.35	41.05	19.31	60.36	39.74	8.28	48.03

Girth Class (cm)	Yadav's Plan (1998)			Rao's Plan (2008)			Current Plan (2022)		
	Teak	Non Teak	Total (2+3)	Teak	Non Teak	Total (5+6)	Teak	Non Teak	Total (8+9)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
75-90	19.24	8.84	28.08	26.68	14.38	41.06	25.32	7.08	32.41
90-105	11.76	9.12	20.88	11.37	8.28	19.65	12.05	4.83	16.88
105-120	5.37	5.41	10.78	4.63	5.67	10.3	4.97	2.84	7.81
>120	2.53	8.39	10.92	2.59	8.12	10.71	2.36	3.32	5.68
Total	301.95	129.24	431.19	268.93	205.56	474.49	210.85	108.59	319.43

TABLE NO. 6.3: GROWING STOCK (TREES/HA) COMPARISON OF SCI WC OVER THE PAST 2 ENUMERATIONS

Girth Class (cm)	Rao's Plan (2008)			Current Plan (2022)			Difference		
	Teak	Non Teak	Total (2+3)	Teak	Non Teak	Total (5+6)	Teak (2-5)	Non Teak (3-6)	Total (8+9)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
15-30	60.92	66.91	127.83	32.55	34.94	67.49	-28.37	-31.97	-60.34
30-45	64.9	49.67	114.57	45.32	28.39	73.71	-19.58	-21.28	-40.86
45-60	56.79	33.22	90.01	48.54	18.90	67.44	-8.25	-14.32	-22.57
60-75	41.05	19.31	60.36	39.74	8.28	48.03	-1.31	-11.03	-12.34
75-90	26.68	14.38	41.06	25.32	7.08	32.41	-1.36	-7.30	-8.66
90-105	11.37	8.28	19.65	12.05	4.83	16.88	0.68	-3.45	-2.77
105-120	4.63	5.67	10.3	4.97	2.84	7.81	0.34	-2.83	-2.49
>120	2.59	8.12	10.71	2.36	3.32	5.68	-0.23	-4.80	-5.03
Total	268.93	205.56	474.49	210.85	108.59	319.43	-58.08	-96.97	-155.06

6.2 GROWING STOCK OF BAMBOO

Bamboo presence is very scarce in the Yavatmal Forest Division. Hence growing stock of bamboo was not assessed.

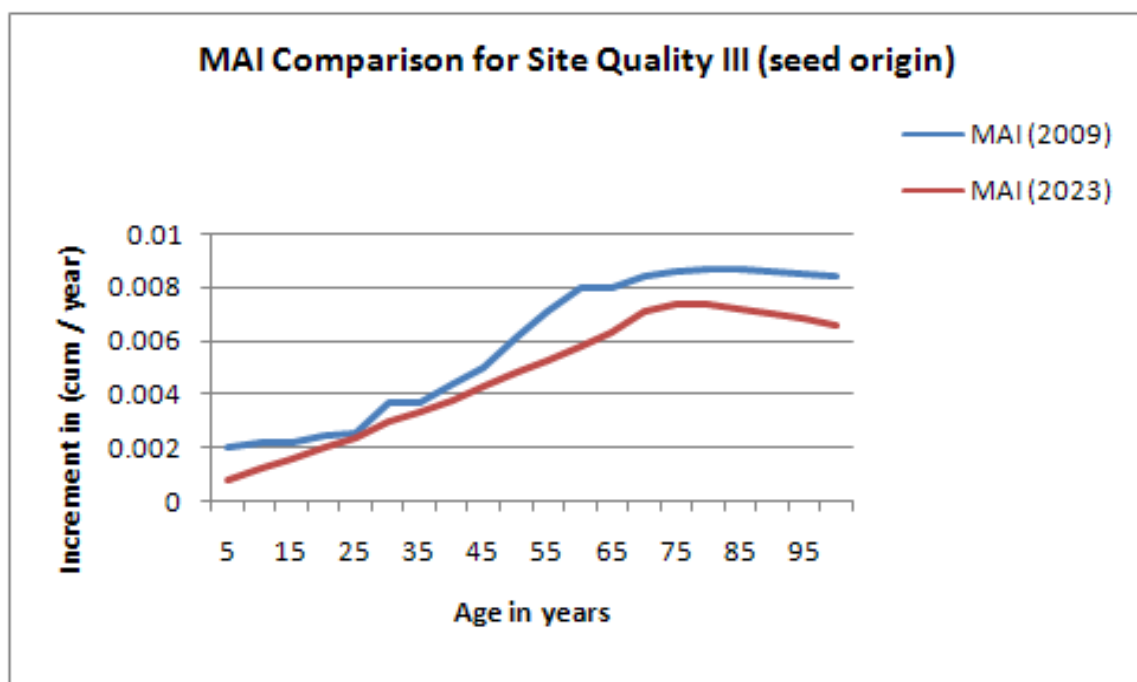
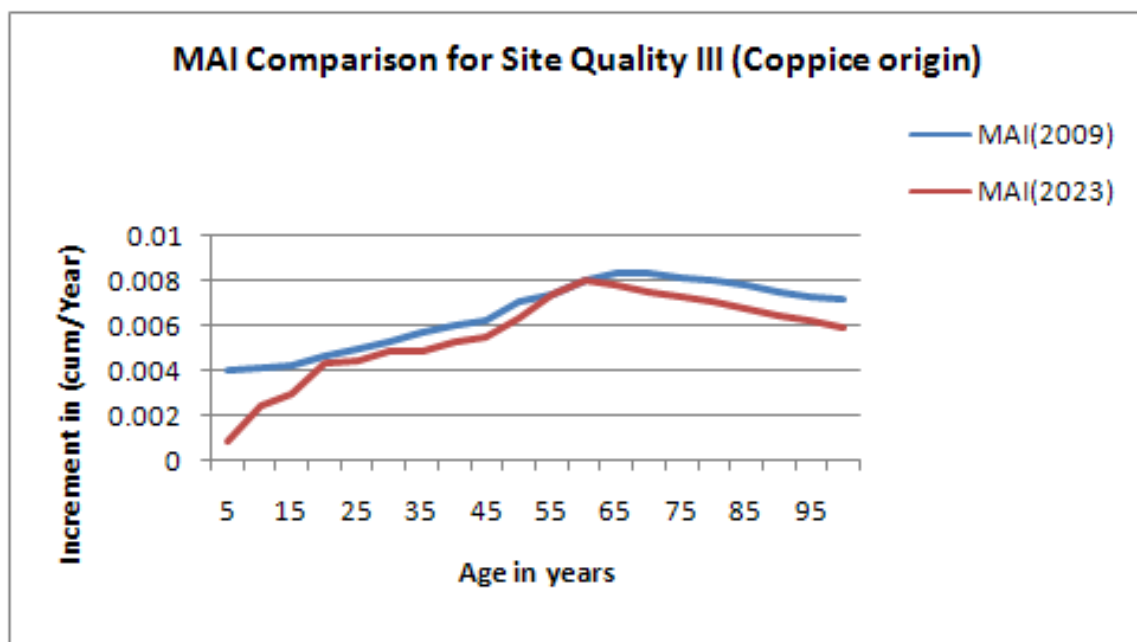
6.3 INCREMENT IN VOLUME OF IDENTIFIED TIMBER SPECIES

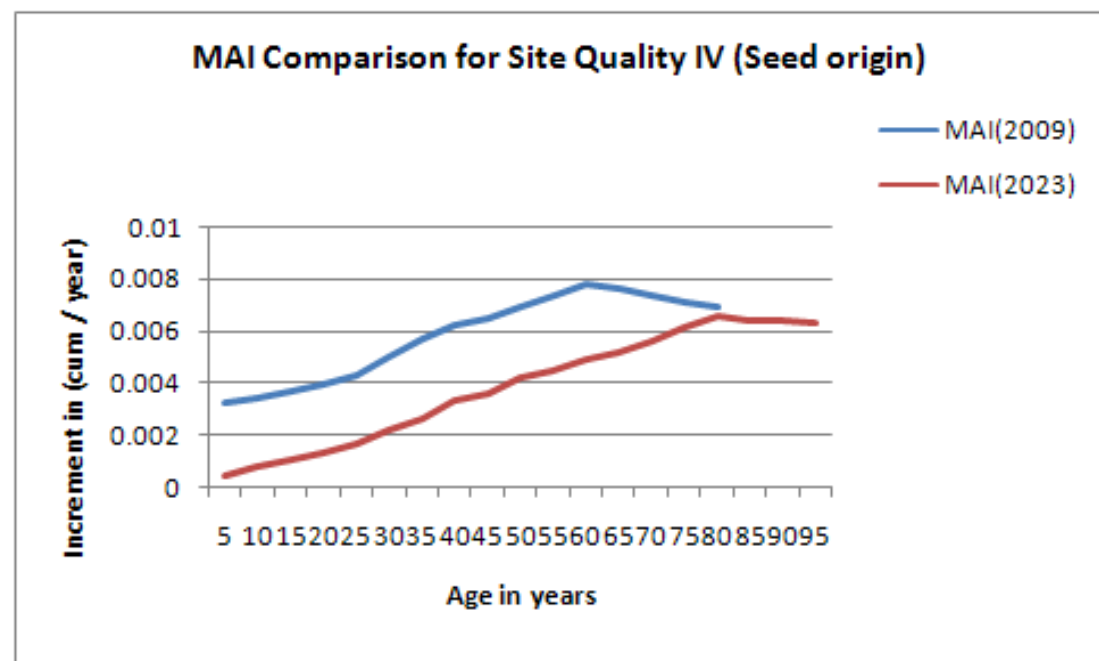
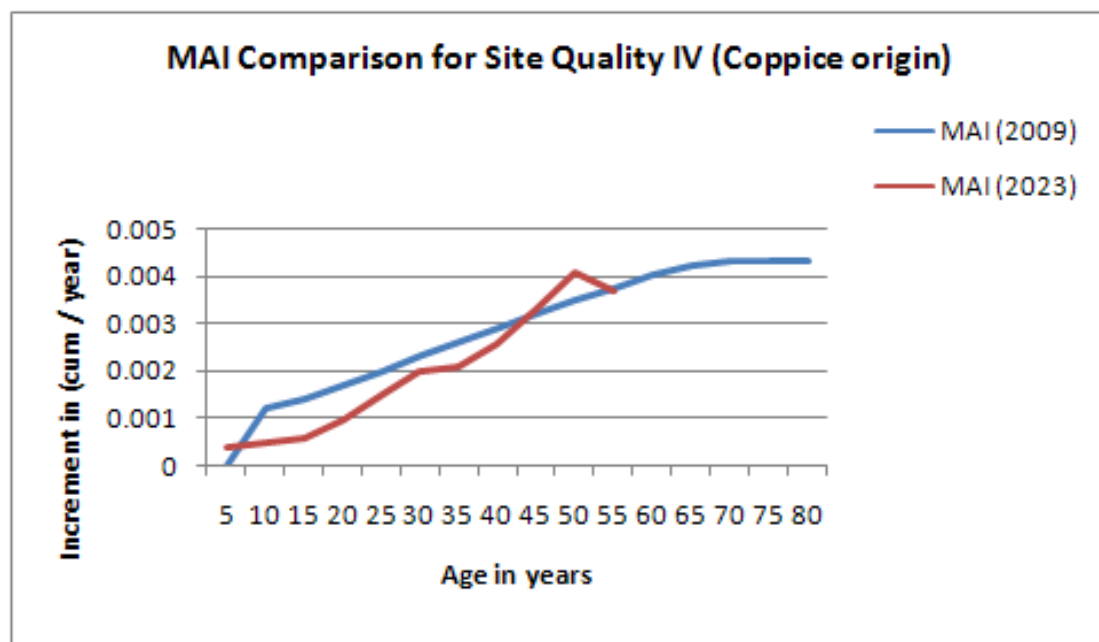
During revision of this plan, stem analysis for teak was carried out by selecting four representative teak trees each of seedling origin and coppice origin. The result of stem analysis is given in **Appendix No.XII (A)** and **Appendix No.XII (B)**. A comparison chart of MAI estimated from stem analysis of the current plan and the previous plan is provided below:



TABLE NO. 6.4: MEAN ANNUAL INCREMENT COMPARISON CHART

Sr. No.	Age	MAI (m ³ /year)							
		Coppice				Seed Origin			
		SQIII		SQ IV		SQIII		SQ IV	
		2009	2023	2009	2023	2009	2023	2009	2023
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	5	0.004	0.0008	0.0012	0.0004	0.002	0.0008	0.0032	0.0004
2	10	0.0041	0.00238	0.0012	0.0005	0.0022	0.0012	0.0034	0.00077
3	15	0.0042	0.0029	0.0014	0.0006	0.0022	0.0016	0.0036	0.001
4	20	0.0046	0.0043	0.0017	0.001	0.0024	0.002	0.0039	0.0013
5	25	0.0049	0.0044	0.002	0.0015	0.0025	0.0024	0.0043	0.0016
6	30	0.0053	0.0048	0.0023	0.002	0.0037	0.003	0.005	0.0022
7	35	0.0057	0.0048	0.0026	0.0021	0.0037	0.003314	0.0057	0.0026
8	40	0.006	0.0052	0.0029	0.0026	0.0044	0.00375	0.0062	0.0033
9	45	0.0062	0.0055	0.0032	0.0033	0.005	0.004267	0.0065	0.0036
10	50	0.007	0.0063	0.0035	0.0041	0.0061	0.0048	0.0069	0.0042
11	55	0.0074	0.0074	0.0037	0.0037	0.0071	0.005309	0.0074	0.0045
12	60	0.008	0.008	0.004	-	0.008	0.005833	0.0078	0.0049
13	65	0.0083	0.0078	0.0042	-	0.008	0.006308	0.0076	0.0052
14	70	0.0083	0.0075	0.0043	-	0.0084	0.007143	0.0074	0.0056
15	75	0.0081	0.0073	0.0043	-	0.0086	0.007333	0.0071	0.0062
16	80	0.008	0.007	0.0043	-	0.0087	0.007375	0.0069	0.0066
17	85	0.0078	0.0067	-	-	0.0087	0.007176	-	0.0064
18	90	0.0075	0.0064	-	-	0.0086	0.007	-	0.0064
19	95	0.0073	0.0062	-	-	0.0085	0.006842	-	0.0063
20	100	0.0071	0.0059	-	-	0.0084	0.0066	-	-





6.4 EFFORTS TOWARDS ENHANCEMENT OF FOREST PRODUCTIVITY THROUGH QUALITY PLANTATION ACTIVITIES

A total of 7197.45 hectares of plantation has been done during the plan period. Plantations include teak and miscellaneous species. In the Yavatmal Forest Division, the details of plantation activities that have been carried out in the past ten years are given in **Appendix No. XIII**.



The summary of plantations is given in the table below.

TABLE NO.6.5 : PLANTATION CARRIED OUT BY FOREST DEPARTMENT

Sr.No.	Year	Area (ha)	No. of Plants
(1)	(2)	(3)	(4)
1	2013	793.72	619772
2	2014	530.00	723043
3	2015	836.37	741559
4	2016	531.00	689545
5	2017	921.81	844037
6	2018	833.00	876760
7	2019	459.37	460105
8	2020	1062.92	1121507
9	2021	992.00	944510
10	2022	13.46	15000
Total		7197.45	7318078

6.5 CARBON STOCK

Carbon stocks in forests refer to the amount of carbon stored in the trees, vegetation, and soil within forest ecosystems. Forests act as crucial carbon sinks, absorbing and storing significant amounts of carbon dioxide through photosynthesis. Trees capture carbon and store it in their trunks, branches, and leaves, while the forest soil holds carbon through decomposed organic matter. Protecting and properly managing forests is essential for maintaining and increasing carbon stocks, as deforestation and degradation release stored carbon back into the atmosphere.

Forest conservation and reforestation efforts are crucial for mitigating climate change and preserving carbon stocks in these valuable ecosystems.

In the forest ecosystem, carbon stored is classified in to five pools. The living portion of biomass carbon is classified in two pools; the 'above ground biomass' (AGB) and 'below ground biomass' which are stores of significant amounts of carbon. The 'dead organic matter' (DOM) is also classified into two pools; 'dead wood' and 'litter'. The fifth pool is 'Soil organic matter' (SOM) which contains substantial amount of organic carbon.

Table No. 6.6 : CARBON STOCKS IN DIFFERENT POOLS IN VARIOUS FOREST DENSITY CLASSES AS PER FSI ISFR 2021

Forest Type	Density	Carbon Stock per ha (in tonnes)					
		AGB	BGB	Dead wood	Litter	SOC	Total ($\Sigma 3$ to 7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Tropical Dry deciduous	VDF	35.34	14.84	0.49	2.01	51.90	104.58
	MDF	28.33	11.90	0.34	1.02	48.59	90.18
	OF	12.75	5.35	0.28	0.88	41.38	60.64

Using the above table and as per the area of forest in the corresponding forest cover density class, estimations of carbon stock in various pools are drawn for Yavatmal division.

TABLE NO. 6.7 : CARBON STOCK OF YAVATMAL FOREST DIVISION

Density class	Area (ha)	Carbon Stock in Yavatmal Division (in '000 tonnes)					
		AGB	BGB	Dead wood	Litter	SOC	Total ($\Sigma 3$ to 7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VDF	172.09	6.08	2.55	0.08	0.35	8.93	17.99
MDF	21892.71	620.23	260.53	7.44	22.33	1063.8	1974.31
OF	36048.44	459.61	192.86	10.09	31.72	1491.7	2185.95
Total	58113.24	1085.92	455.94	17.61	54.40	2564.43	4178.25

Because carbon stock is provided only for wooded type of forests, the carbon stock estimation is available only for 58113.24 ha in the division. Remaining area in scrub forests and no vegetation land although contribute to carbon stocks especially through soil carbon are not accounted for.

TABLE NO. 6.8 : RANGE WISE ESTIMATIONS OF CARBON STOCK IN YAVATMAL FOREST DIVISION

Range	Carbon Stock (in '000 tonnes)					
	AGB	BGB	Dead Wood	Litter	SOC	Total ($\Sigma 2to6$)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Darwha	75.04	31.50	1.37	4.28	201.26	313.45
Hiwri	191.19	80.28	3.04	9.36	441.44	725.30
Jodmoha	182.82	76.76	3.00	9.25	437.40	709.23
Ner	54.18	22.74	1.00	3.12	147.13	228.17
N Arni	172.16	72.28	2.79	8.61	407.00	662.85
S Arni	161.61	67.85	2.62	8.07	381.47	621.61
Wadgaon	122.52	51.45	1.84	5.63	266.57	448.01
Yavatmal	126.41	53.08	1.96	6.08	282.11	469.63
Total	1085.93	455.94	17.62	54.40	2564.38	4178.25

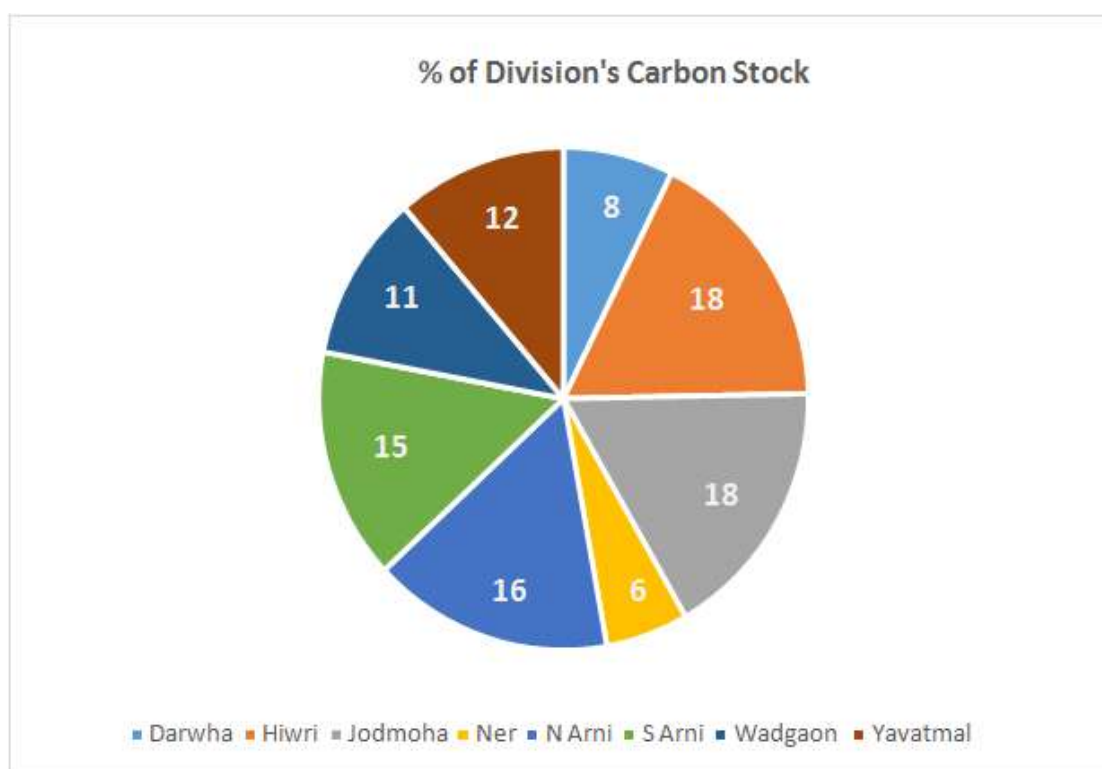


TABLE NO. 6.9 :CARBON STOCK COMPARISON FOR YAVATMAL DIVISION

Carbon Pool	Carbon Stock in Forests of (in Million Tonnes)			% to India's (4/2*100)	% to MH's (4/3*100)
	India	Maharashtra	Yavatmal Division		
(1)	(2)	(3)	(4)	(5)	(6)
AGB	2238	143	1.09	0.049	0.759
BGB	699	49	0.46	0.065	0.930
Dead Wood	30	2	0.02	0.059	0.881
Litter	136	9	0.05	0.040	0.604
SOC	3979	290	2.56	0.064	0.884
Total	7082	493	4.18	0.059	0.848

6.6 CARBON SEQUESTRATION AND MITIGATION

Carbon sequestration refers to the process of capturing and storing carbon dioxide (CO₂) from the atmosphere, thus mitigating the effects of greenhouse gas emissions and climate change. It plays a crucial role in reducing the concentration of CO₂ in the atmosphere by removing it and storing it in various reservoirs, such as forests, oceans, and soil. Natural processes like photosynthesis in plants and the absorption of CO₂ by the oceans contribute to carbon sequestration. Additionally, human activities such as reforestation, afforestation, and sustainable land management practices can enhance carbon sequestration. Forests, in particular, are valuable carbon sinks, as trees absorb CO₂ during photosynthesis and store it in their biomass and soil. Maximizing carbon sequestration efforts is essential for achieving global climate goals and creating a more sustainable and resilient future for our planet.

Under Rao's plan, tree plantations covering a total area of 6213.72 hectares and fodder plantations spanning 558 hectares were taken up across the division. The preferred model for these plantations was chain-link fencing, which has proven effective in enhancing the survival rate of the planted trees and contributing to ecosystem restoration.

The current plan proposes the allocation of 16,919.23 hectares for Afforestation Working Circle and 12472.43 hectares for Fodder Improvement Working Circle, to be implemented within the specified plan period. These efforts will expand the forest cover within the division and contribute to the carbon sequestration capacity of the forest. Additionally, the plan promotes natural regeneration, which will augment the biomass and carbon content through increased vegetation.

6.6.1 SOIL ANALYSIS

Soil samples were collected from different compartments of Yavatmal forest division. These samples were analyzed for various physical and chemical properties. The details are given in **Appendix No.XIV.**



Chapter 7

OPTIMIZATION OF FOREST RESOURCE UTILIZATION

7.1 RECORDED REMOVAL OF TIMBER

Timber is in demand for the purpose of construction, furniture making and preparation of agriculture implements by the local people. The main preferred species is Teak, which is followed by Ain, Dhawda, Kalam, Tiwas, Bija, Behada and Khair. Most of these species are also in demand locally for various construction purposes. Local demand for timber is met from the timber removed from the forest division. The timber depot at Jodmoha in Jodmoha Range caters to the needs of the local population.

TABLE NO.7.1: TIMBER AUCTIONED AND REVENUE REALIZED

Sr.No.	Year	Timber (m ³)	Revenue (Rs. Lakhs)
(1)	(2)	(3)	(4)
1	2012-2013	10763.15	2726.50
2	2013-2014	5791.92	1162.73
3	2014-2015	2400.95	446.78
4	2015-2016	2482.91	549.37
5	2016-2017	2604.73	701.99
6	2017-2018	3066.55	743.12
7	2018-2019	1903.80	466.71
8	2019-2020	1708.45	380.99
9	2020-2021	1310.01	337.60
10	2021-2022	721.56	189.06
	Total-	32754.03	7704.85

During the previous plan period, a total of 15,440.44 cubic meters of timber was harvested in the Selection Cum Improvement Working Circle (SCI), with an average production of 1.56 cubic meters per hectare. And in the Improvement Working Circle (IWC), 1,500.19 cubic meters of timber was extracted during the same period, resulting in an average production of 0.71 cubic meters per hectare.

7.2 RECORDED REMOVAL OF FUEL WOOD

Forest dwellers heavily rely on firewood for cooking, lighting, and warmth in their homes, particularly during winters. Firewood is essential for cooking purposes, and in some villages, fires are kept burning in and around huts throughout the night to provide warmth and deter wild animals. Among different species, Dhawada, Anjan, Babul, Ain, and Khair are preferred for fuelwood, while wood from all species that are not suitable for timber sale is used as fuelwood.

Although the introduction of modern cooking fuels like LPG gas and electric appliances has reduced dependence on fuelwood, it still remains the primary cooking fuel for most villagers and rural people in the Yavatmal Division. Dhawda is the most sought-after species for fuelwood, followed by other hardwood species like Khair, Ain, and Babul, which are preferred over some softwood species like Salai, Moyen, and Behada. Due to the high demand surpassing supply, illegal tree lopping and the transportation of lopped branches, often carried out by women, are frequently observed to meet the various needs, including commercial consumption. Currently, no fuelwood supply is provided to local villagers under the Nistar system.

Illegal fuelwood consumption involves the unlawful removal of branches from trees in the forests, with transportation carried out on foot, bicycles, and bullock-carts, resulting in significant damage to the forest. Most ginning mills and processing factories in the area have shifted to alternatives such as coal and oil, reducing their reliance on firewood.

TABLE NO.7.2: FIREWOOD AUCTIONED AND REVENUE REALIZED

Sr. No.	Year	Quantity (m ³)	Revenue (Rs. Lakhs)
(1)	(2)	(3)	(4)
1	2012-2013	1626.68	30.23
2	2013-2014	1405.34	35.31
3	2014-2015	1202.31	19.64
4	2015-2016	889.52	19.76
5	2016-2017	636.68	22.24
6	2017-2018	426.31	8.48
7	2018-2019	483.72	12.09
8	2019-2020	94.42	2.54
9	2020-2021	519.17	21.76
10	2021-2022	204.31	7.34
	Total	7488.46	179.39

7.3 RECORDED REMOVAL OF BAMBOO/RATTANS

Availability of bamboo is very scarce, hence there is no documentation of recorded removal of bamboo or rattans. In this area, bamboo production is almost nil except on private farms. Local people when they need bamboo, purchase it from local markets or some local farmers who grow bamboo on their agricultural land.

7.4 RECORDED REMOVAL OF LOCALLY IMPORTANT NTFPs INCLUDING MAPs**7.4.1 TENDU LEAVES**

Tendu is one of the major revenue earning forest produces. Collection of tendu leaves commences from the last week of April and continues upto first week of June each year. Tendu leaves are collected by engaging labourers who deliver the leaves at various collection centers called “Phadi”. After drying, bagging of leaves is done at collection centers and then bags are transported to the approved godowns.

The quantity of tendu leaves is measured in standard bag. One standard bag contains 1000 bundles/pudas. Each bundle/puda contains 70 tradable leaves.

There are 10 Tendu units (including 1 PESA unit) in Yavatmal Forest Division. The scattered distribution of tendu leaves, lesser areas available for collection and quality of tendu leaves determine the price of the tendu leaves. The details of sale of tendu leaves are given in the table below.

TABLE NO.7.3 (A) TENDU UNITS AUCTIONED, STANDARD BAGS COLLECTED AND REVENUE REALIZED (NON-PESA UNITS)

Sr. No.	Year	Units Auctioned	Target (Std. Bags)	Actual Yield (Std. Bags)	Revenue (Rs. Lakhs)
(1)	(2)	(3)	(4)	(5)	(6)
1	2011	7	13700	11882	113.82
2	2012	10	19700	18574	190.25
3	2013	2	3300	3070	26.07
4	2014	3	6300	4406	39.00
5	2015	7	10750	7698	66.55
6	2016	9	13650	11035	158.20
7	2017	9	10200	10046	308.20
8	2018	8	10316	5919	132.13
9	2019	2	9550	2637	31.29
10	2020	1	8700	1199	15.89
11	2021	5	5200	4699	54.21
Total		63	111366	78095	1135.61

TABLE NO.7.3(B): TENDU UNITS AUCTIONED AND REVENUE REALIZED (PESA UNITS)

Sr.No.	Year	Tendu PESA Unit	Revenue (Rs Lakhs)
(1)	(2)	(3)	(4)
1	2015	Sawali	2.69
2		Sakhara and Kinhi	4.79
3	2016	Sawali	9.79
4	2019	Sawali	1.80
		Total :-	19.07

7.4.2 : GUM: Gum producing units are less and sparsely distributed, therefore not feasible for auction.

7.4.3 FRUITS AND FLOWERS: Moha flowers and seeds, charoli, biba, hirda and beheda seeds apart from the fruits of Tendu, Char, Jamun, Awala, Imli etc. have good demand in the market. However, the production of these forest produce is less and the local people harvest them. Only Sitafal fruit is harvested in an organized manner through auction. The details of revenue obtained from the Sitafal unit in Kurhad village of Darwha Range from year 2014 to 2020 are given below.

TABLE NO. 7.4: REVENUE REALIZED FROM AUCTION OF SITAPHAL UNIT

Year	Particulars	Revenue (in Lakhs)
(1)	(2)	(3)
2014	1500 sitafal trees	0.05
2015	1500 sitafal trees	0.15
2016	1500 sitafal trees	0.45
2017	1500 sitafal trees	0.00
2018	1500 sitafal trees	0.26
2019	1500 sitafal trees	0.54
2020	1500 sitafal trees	0.42
Total		1.87

In the remote forest areas the villagers collect flowers of Moha, fruits of Tendu, Char, for their bonafide use or for their religious and customary functions or for sale to earn their livelihood.

7.4.4: OTHER PRODUCTS: Apart from above mentioned products, local people depend upon forest for gums (Dhawda, Babul etc.), flowers of Palas, fruits of Tendu, Bel, flowers and seeds of Moha etc. to meet their livelihood demand and bonafide sale even for their livelihood.

An estimation of important NTFPs was carried out. Details are given below:

TABLE NO. 7.5: NTFP ESTIMATION FOR YAVATMAL DIVISION (2023)

Sr. No.	NTFP	No. of Trees	Approx Production per Tree(kg)	Estimated Production (kg) Potential (3*4)	MSP/KG In Rupees (TRIFED)	Total Economic Value (Lakhs) (5*6/100000)	50% of Total Economic Value (Lakhs)	Individual Per Day collection (kgs)	Man days Generation Potential
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Moha Flowers	45536	25	1138400	30	34.15	17.08	10	113840
2	Charoli	17796	0.05	890	126	0.11	0.06	1	890
3	Moha Seeds	45536	10	455360	29	13.21	6.6	25	18214
4	Karanj Seeds	9945	2	19890	19	0.38	0.19	5	3978
5	Palas Seeds	5008936	1	5008936	20	100.18	50.09	5	1001787
6	Beheda	39778	5	198890	17	3.38	1.69	2	99445
7	Awala fruit	10991	1	10991	30	0.33	0.16	1	10991
8	Palas gum	5008936	0.2	1001787	195	195.35	97.67	0.5	2003574
9	Khair gum	64902	0.25	16226	195	3.16	1.58	0.25	64902
10	Karu gum	6804	0.3	2041	195	0.4	0.2	0.1	20412
11	Dhawada gum	367424	0.3	110227	195	21.49	10.75	1	110227
12	Salai gum	106774	0.3	32032	195	6.25	3.12	1	32032
Total						378.39	189.19		3480293

7.5 DEMAND AND SUPPLY OF TIMBER AND IMPORTANT NON-TIMBER FOREST PRODUCE

7.5.1 DEMAND AND SUPPLY OF FOREST PRODUCE AND PRESSURE ON THE FOREST

The consumption of timber is crucial for both rural and urban populations, serving various purposes. To assess the demand per family, an estimation has been conducted for the six talukas of the Yavatmal forest division. The Forest Survey of India (FSI) has provided estimates of timber requirements for housing, furniture, agricultural implements, and other purposes in their State of the Forest Report (2019). FSI conducted a nationwide study to quantify the dependence of people living in villages near forests on fuelwood, fodder, small timber, and bamboo in each state and union territory of the country. For Maharashtra, FSI has provided estimated quantities of these four resources in the India State of Forest Report (2019).

Based on the population of Maharashtra in 2011 (11.24 crores), the per capita requirement is calculated as follows: 0.225 tonnes for fuelwood, 5.905 tonnes for fodder, 0.003 tonnes for bamboo, and 0.020 cubic meters for small timber. These estimations provide insights into the dependence of people in forest fringe villages near forests in Maharashtra. Using these parameters, the dependency of local people on forests is estimated as shown below:

TABLE NO.7.6: ESTIMATION OF DEPENDANCE OF PEOPLE ON FOREST

Sr. No.	Taluka	Population	Fuelwood @0.225 tonnes /person/ year	Fodder @5.905 tonnes /person/ year	Bamboo @0.003 tonnes/ /person/ year	Small Timber @ 0.020 cum /person/year	Total tonnes /year (Σ4to7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Yavatmal	339458	76378.05	2004499	1018.37	6789.16	372641
2	Arni	139786	31451.85	825436	419.358	2795.72	261410
3	Darwha	173452	39026.70	1024234	520.356	3469.04	232094
4	Ner	110337	24825.82	651540	331.011	2206.74	282064
5	Babhulgaon	89130	20054.25	526313	267.39	1782.60	380740
6	Kalamb	95820	21559.50	565817	287.46	1916.40	309657
Total		947983	213296.20	5597840	2843.949	18959.66	1838607

7.6 IMPORT AND EXPORT OF WOOD AND WOOD PRODUCTS

Local people utilize most of the forest produce to meet their domestic needs. Yavatmal is a good timber market. Harvested timber is transported to the local depot at Jodmoha. Teak timber is sent to Nagpur, Mumbai, Hyderabad and other places.

7.7 IMPORT AND EXPORT OF NTFPs

There is no record of import or export of NTFPs.

7.8 REMOVAL OF FODDER

Grass from closed coupes and plantations should be made available on cutting basis. As per the existing Government orders, annual lease of grass birs for removal of grass on cutting basis, is first offered to Gram Panchayats, Co-operative Milk Societies and other Public Bodies at a price fixed by the Forest Department, considering current market trend and availability of grass. The lease of those areas which could not be disposed off in this way, is sold by auction. The grass from the areas which remain unsold by any of the above methods is sold on rated passes. In drought years, grass from grass birs is kept reserved under the orders of the Collector and is cut and supplied to the drought affected areas.

7.9 VALUATION OF THE PRODUCTS

The details of the quantity revenue realized from sale of timber, firewood, tendu and sitafal are mentioned in table Nos. 7.1, 7.2, 7.3 and 7.4.

CHAPTER -8

MAINTENANCE AND ENHANCEMENT OF SOCIAL, ECONOMIC, CULTURAL AND SPIRITUAL BENEFITS

8.1 NUMBER OF JFM COMMITTEES AND AREAS PROTECTED BY THEM

Yavatmal Division along with the state has come to embrace the Joint Forest Management as one of the tools of forest management as early as the mid – nineties. Ever since, the people's/ community's participation in conservation and management of forest and wildlife resources has been an integral part. In Yavatmal Forest Division a total of 251 JFMCs have been established and these committees cover an area of 55,364.37 ha. All the areas adjoining villages have been covered under JFM, which take up 66% of forest area of division currently. JFM Committees have taken up plantation over an area of 602 ha. on 26 sites and planted around 6,50,682 saplings during the period of the last working plan.

8.2 STATUS OF EMPOWERMENT OF JFMCs

State's JFM is guided by the Govt. of Maharashtra resolution dated March 16, 1992, October 5, 2011 and July 10, 2012. In Yavatmal division, 251 JFMCs are established in the villages adjacent to the forests. The total numbers of members in the committee are minimum 12 and a maximum of 24 and 1/3rd of the members are to be from the Gram Panchayat. 50 % of the members should be women and 2 members should be from SC/ST and OBC. The performance of committee in the Division has been adequate. The Forest Development Agency is well established and its working is satisfactory. Efforts to make the functioning and transaction of funds more and more transparent are going on in the FDA.

8.3 LABOUR WELFARE

The JFM villagers have priority over others in all the activities of the Department for semi-skilled and unskilled labour. Works of plantations, natural regenerations, boundary pillars repairs, fire line cuttings and all other works of the Department are involved through the JFM members wherever the committee exists. Maharashtra also has the unique distinction of having Forest Labour Cooperative Societies in every division. All skilled works related to felling of trees in the forests are auctioned to these societies.

8.4 USE OF INDIGENOUS KNOWLEDGE

The Department has made its effort in documenting the indigenous traditional knowledge of the people in the Division. It is incorporated in the micro plan and people's biodiversity registers and implemented through JFMC and BMC. Meetings are held from time to time. It is the responsibility of the field officers to tap all kinds of traditional knowledge from the locals, particularly those associated with forest and environment, and to document them for posterity.

8.5 EXTENT OF CULTURAL/SACRED GROVES

There are no recorded sacred groves in the Division. Nevertheless, there are sites of cultural significance. Shri Mandev temple in compartment number 496 of Hiwari range draws huge crowds during Shivratri. Shri Chousaleshwar Mandir located in compartment number 468, currently under FDCM, is also visited by large number of devotees during Shivaratri. Other famous religious sites include Maruthi devasthan in compartment no. 465, Yavatmal range and Mahalakshmi temple in compartment no. 114, Darwha range.

8.6 ECOTOURISM AREAS AND ACTIVITIES

ECO – TOURISM

Eco- tourism is defined as "tourism that involves traveling to relatively undisturbed natural areas with the specified objects of studying, admiring and

enjoying the scenery and its wild plants and animal as well as any existing cultural aspects (both of the past and the present) found in these areas.”

Following sites are eco-tourism spots in Yavatmal Forest Division:

TABLE NO. 8.1 : ECO-TOURISM SPOTS IN YAVATMAL FOREST DIVISION

Sr. No.	Range	Name and Location	Compartment No.
(1)	(2)	(3)	(4)
1	Yavatmal	Oxygen Park, Godhni Road	513
2		Vasant Smruti Forest Park, Yavatmal	513
3		Bamboo & Chandan Park, Dhumnapur	465
4		Biodiversity Forest Park, Jamb	512
5		Chandan Park, Waraj	410
6	Hiwari	Mandev Mandir, Manpur	496
7	Darwha	Darwha Forest Park, Darwha	117
8		DeulgaonWalsa Sri MahalakshmiDevasthan, Deulgaon	114
9		Dhamangaon Dev Sant Mungasaji Maharaj Samadi Sthal, Dhamangaon	159
10	Ner	Aroma Park, Ner	425
11	South Arni	Mangul Eco Tourism Park, Mangul	41

8.7 SOCIAL CUSTOMS

Social customs relevant to the forest or its conservation are not noticed.

8.8 STATUS OF COMPLIANCE OF FOREST RIGHT ACT (FRA)

The status of implementation of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 in Yavatmal Forest Division is summarized in the table below.

TABLE NO. 8.2 STATUS OF IMPLEMENTATION OF FRA, 2006 (as on March 31, 2023)

Sr. No.	Type of FRA benefit	No. of Proposals Received at Gram Sabhas	No. Proposals Accepted at DLC	Total Area (ha.)
(1)	(2)	(3)	(4)	(5)
1	Individual Forest Rights	371	163	200.46
2	Community Forest Rights	217	217	42531.01
3	FRA U/S 3(2)	34	34	8.677
	Total	622	414	42740.147

8.9 OTHER RIGHTS AND CONCESSIONS**8.9.1 RIGHTS AND CONCESSIONS**

There are no rights in the reserved forests except certain rights associated with right of way and access to water. There is no communication of nistar in Yavatmal forest division. Various concessions have been granted from time to time the agriculturist and other by the Govt. of Maharashtra. The following concessions have been permitted:

1. The grazing of cattle belonging to the agriculturists of certain villages in the vicinity of the reserved forests in accordance with the grazing rules in force.
2. Grazing in R.F. is covered by the Grazing settlement. The grazing concessions are allowed as per grazing policy of Maharashtra State depending upon the cattle unit and carrying capacity of forest.
3. State Government has fixed the grazing units on the functional basis of forest (Protected forest, tree forest, minor forest and pasture forest) vide Government resolution No. MFP-1365 / 13211 Y, Dated 6.12.1968.
4. State Government has fixed the grazing unit for sheep / goat vide resolution NO. MFP-2103 / F-1 / Dated 6.5.2008 and area of 17986.61 ha is fixed for grazing of local cattle.

5. As per current Working plan, 33 grazing units are permitted for grazing but in fact there are more cattle than carrying capacity of the tract. The excess cattle units can be managed through fodder development activities on common community land and waste lands. The villagers shall be educated and made aware of ill effects of excessive grazing on forest regeneration and growth. The villagers shall be pursued to go for stall feeding. The list of grazing units in Yavatmal Forest Division is given in **Appendix No. XVIII.**
6. Farmers of villages in the vicinity of the reserved forest are given a certain quantity of Bamboo and firewood for their bonafide domestic use at concessional rates, none of these concessions is a legal right.



8.10 DEPENDENCY OF LOCAL PEOPLE OF NTFPS

The species of NTFP are available throughout the tract with varying degree. These produce meet the NTFP demand of local forest dwellers directly or indirectly. They not only play an important role in economy but also generate employment to the local people. The important NTFP are Tendu, Moha flower, Moha seed, Hirda, Behada, Aoala, Charoli, Kulu, Dhawda, honey etc.

A rich variety of medicinal plants are found in the forest tract of the Yavatmal Forest Division which yield medicines that are used for curing of different ailments by the local people. The medicinal plants play an important role in socio-economic cultural, spiritual and medicinal values of local villagers. Their conservation, sustainable management and harvesting can conserve biodiversity retaining human, environmental health and generate employment.

8.11 OTHER ASPECTS

The Dhangar community relies heavily on the forest for grazing their sheep and goats. This community is primarily located in the Darwha, Ner, and Yavatmal ranges of the Division. The Dhangars demand permission to allow sheep grazing in forest areas, although sheep was not included in the Government Resolution issued on August 2, 1971. However, limited sheep grazing was permitted between

September 15 and May 15 in 21 forest divisions of Maharashtra starting from May 6, 2008. But, Yavatmal Division is not included among these 21 divisions

Areas where the rotational grazing system is not properly followed have shown adverse effects on natural regeneration. Additionally, there has been a gradual increase in the proportion of non-fodder grasses in such areas. Moreover, conflicts between the Dhargar community and forest field staff are frequently observed during the monsoon season. Deputy Conservator of Forests, Yavatmal should conduct a field study to explore a mutually acceptable solution to this problem by 2020-2026.

8.11.1 MEASURES TAKEN FOR REDUCING HUMAN WILDLIFE CONFLICT BY INVOLVING JFMC

Members of JFMCs are engaged in plantation activities under various schemes, engaging the members as fire watchers under fire protection scheme thus generating employment. Members have been imparted training regarding rescue and release of wild animals in their habitat. They have also been trained in rescuing snakes which sneak into human habitations. They are informed about identification of venomous and non venomous snakes. This has markedly resulted in saving of snakes which were being killed out of fear. Waterholes have been created by involving JFMCs and local youth. This has helped the wild animals in lessening movement in search of water. LPG cylinders have been distributed to the families of locals residing in fringe of forest and also to those who are dependent upon forests for their livelihood. This resulted in reduction of their movement in forests and ultimately in reduction of illicit tree felling. As a result of this, there is a decline in human wildlife interactions. Appropriate measures are being taken to dissuade contractors of tendu collection from setting fire to the forest during tendu leaves collection season. Similarly, their responsibility is being fixed, if such incidences are noted. Reduction in such incidences has resulted in decline in incidences of human wildlife conflict. In order to further reduce these cases, awareness is being spread with the help of JFMCs about wild animal habitat and their behavior.

CHAPTER 9

ADEQUACY OF POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

9.1 EXISTING POLICY AND LEGAL FRAMEWORK AND THEIR COMPLIANCE

The existing policy and laws in the country and the State are invoked for the management of the forests of the Division. The National Forest Policy of 1988 is the basic guide for the management strategy of this plan. The Indian Forest Act, 1927 and its amendments is the principal law governing the administration of the forest in the Division. The plan has furtherly drawn inspiration from the following

1. National Forestry Action Plan
2. National Wildlife Action Plan (2017-31)
3. Orders of Hon'ble Supreme Court Of India
4. Forest Right Act, 2006
5. The Biological Diversity Act, 2002
6. Wildlife (Protection) Act, 1972
7. GoI Orders/GoM Resolutions, Circulars Etc.

9.2 STATUS OF APPROVED WORKING PLAN AND COMPLIANCE

The previous working plan for the division was for the period from 2012-13 to 2021-22. A Working Scheme was sanctioned for 2022-23 to work Coupe number XI before this plan was put into action.

9.3 NUMBER OF FOREST OFFENCES

The numbers of forest offences that have been registered under the last ten years are given below.

TABLE NO.9.1: OFFENCE CASES REGISTERED

Year	Fire	Illegal Transport	Illicit felling	Encroachment	Wildlife	Others	Total (Σ2to7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2012-2013	9	17	644	9	5	41	725
2013-2014	11	6	815	12	3	41	888
2014-2015	6	3	830	3	3	1	846
2015-2016	90	5	565	2	5	15	682
2016-2017	67	0	577	0	0	0	644
2017-2018	120	13	482	84	12	52	763
2018-2019	54	0	471	0	3	58	586
2019-2020	2	15	313	14	16	78	443
2020-2021	26	9	345	6	13	69	468
2021-2022	73	9	239	6	22	17	366
Total	458	77	5281	136	82	372	6411

9.4 STATUS OF RESEARCH AND DEVELOPMENT

No research or development work is being carried out in this division.

9.5 HUMAN RESOURCE CAPACITY BUILDING EFFORTS

The department relies heavily on the field staff, who serve as its backbone. It is crucial for them to receive frequent training and exposure at all levels in the field. Lately, the Forest Department has been making significant progress in the realm of Information Technology. Consequently, it is necessary for all officers and field staff to become proficient in using modern technology.

To enhance the capacities of officers at the Deputy Conservator of Forests (DCF), Assistant Conservator of Forests (ACF), and Range Forest Officer (RFO) levels, the department is implementing various training programs. Renowned institutions such as the Forest Research Institute, Forest Survey of India, and Wildlife Institute of India provide training on forestry and wildlife-related advancements. Additionally, other institutions throughout India are engaged to offer training and exposure in diverse areas related to forestry and climate change.

For the training of Foresters and Forest Guards, the department utilizes state training institutes and Rangers' College. In addition to regular training, the field and technical staff members receive instruction on remote sensing, Geographic Information System (GIS), and other IT-related fields. Technical staff members, including Ranger Surveyors and Surveyors, are regularly trained to update their skills in various land management software, such as GeoMedia Professional.

The field staff has been equipped with Personal Digital Assistants (PDAs) for various activities, including plantation, offense cases, fire incidents, encroachment, grazing, and boundary demarcation. The IT cell of the forest department has developed several applications that frontline staff members utilize.

9.6 FOREST RESOURCE ACCOUNTING

In this plan, all efforts have been made to place on record all the tangible benefits received from the forest. The value of the timber and firewood has been fully accounted in the last plan.

For accounting for the intangible benefits, the Net Present Value of the forests as calculated for the calculation of NPV by the Kanchan Chopra Committee and accepted by the Hon. Supreme Court order dated 28.03.2008 is taken as the calculation of the tangible and intangible benefits for accounting the forest values in the Division. The factor of benefits that have been taken while accounting forest area is as follows. For calculating the average Net Present Value per ha. of forest in India, the following monetary value of goods and services provided by the forest have been considered.

- i. Value of timber and fuel wood
- ii. Value of Non timber Forest Products (NTFPs)
- iii. Value of fodder
- iv. Value of Eco-tourism
- v. Value of bioprospecting
- vi. Value of Ecological services of forest
- vii. Value of Flagship Species
- viii. Value of Sequestration Value.

For the purpose of the valuation of the forest, the following Eco- classes of forests have been identified for the purpose of calculation and 16 major groups of forest types of India as classified by the Champion and Seth have been reduced into the following Eco- classes.

TABLE NO.9.2: ECO-CLASSES OF FORESTS

Eco class - I	Tropical Wet Evergreen Forest, Tropical Semi Evergreen Forests and Tropical Moist Deciduous Forests
Eco class - II	Littoral and Swamp Forests
Eco class - III	Tropical Dry Deciduous Forests
Eco class - IV	Tropical Thorn Forests, Tropical Dry Evergreen Forests
Eco class - V	Subtropical Dry Evergreen Forests, Subtropical Pine Forests, Subtropical Pine Forests
Eco class - VI	Montane Temperate Forests, Moist Temperate Forests, Sub Alpine Temperate Forest, Dry Temperate Forests, Moist Alpine Scrub, Dry Alpine Scrub

The forests of Yavatmal Division comes under Eco-Class III and the value attached to this area as given below as per the canopy density. The value of the forests varies with the type of forest and its attributes. This value has further been

revised by the Indian Institute of Forest Management, Bhopal and is yet to be approved. The IIFM study is more comprehensive and takes into account all aspects of the intangible benefits that the forest eco-system provides.

The value of the forests of Yavatmal Forest Division as per the current and proposed NPV value is given below.

TABLE NO.9.3: VALUATION OF YAVATMAL FORESTS BASED ON NPV

Sr. No.	Forest Class Category	Area (ha.)	Current Rate of NPV (Rs lakh/ha)	Value of Forests at Current Rate (Rs crores) (3*4)	Proposed Rate of NPV (Rs lakh/ha)	Value of Forests at Proposed Rate (Rs crores) (3*6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	VDF	193.32	13.57	26.23	25.50	49.30
2	MDF	23752.66	12.29	2919.20	19.00	4513.01
3	OF	32273.52	9.58	3091.80	11.40	3679.18
4	Scrub	24070.95	9.58	2306.00	7.90	1901.61
Total				8343.23		51225.30

As per the available rates for different forest canopy classes, the NPV for Yavatmal Forest Division is 8343 crores. However, considering the IIFM report for estimating maximum number of ecosystem services, the amount turns out to be 51225 crores.

Annual valuation of different ecosystem services in various forest classes of dry deciduous forests as per IIFM Report is given below:

**TABLE NO.9.4: VALUATION OF ECOSYSTEM SERVICES IN YAVATMAL FOREST
DIVISION**

Sr. No.	Ecosystem Service	Value in Rs./ha/yr				Yavatmal Division (in Rs crores/ year)
		Very Dense	Dense	Open	Scrub	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Timber production	60,058	41,198	15,346	1,707	152.65
2	Bamboo production	23,376	4,274	909	275	14.20
3	Fodder production	12,535	12,535	12,535	12,535	100.64
4	NTFP	17,074	17,026	7,754	930	68.03
5	Fuel wood production	5,320	5,320	5,320	5,320	42.71
6	Carbon Sequestration	3,361	2,442	1,150	488	10.75
7	Gene pool conservation*	67,852	67,852	67,852	67,852	544.79
8	Pollination and seed dispersal	10,167	10,167	10,167	10,167	81.63
9	Soil conservation	13,947	9,024	4,101	823	36.92
10	Water recharge	1,951	1,269	527	103	5.00
11	Carbon storage*	300,064	2,70,040	95,721	95,721	1185.50
12	Water purification	2,950	2,950	2,950	2,950	23.69
Total						2267.57

*To be omitted in calculating annual valuation.

Excluding the economic value of genepool conservation and carbon storage which are one-time values, the annual value of ecosystem services provided by the forests of Yavatmal Division is Rs. 536.24 crores.

9.7: BUDGETARY ALLOCATIONS TO THE FORESTRY SECTOR

TABLE NO.9.5: STATEMENT SHOWING THE REVENUE, EXPENDITURE AND SURPLUS

Year	Revenue (Rs in lakh)	Expenditure in (Lakh)			
		Conservancy & Work (Rs in Lakh)	Establishment (Rs in Lakh)	Plan (Rs in Lakh)	Total Expenditure (3+4+5)
(1)	(2)	(3)	(4)	(5)	(6)
2011-12	1664.25	552.28	1133.62	968.88	2654.78
2012-13	2217.35	708.02	1239.19	1573.63	3520.85
2013-14	182.38	543.37	1472.21	928.04	2943.61
2014-15	637.82	688.29	1362.41	1996.04	4046.74
2015-16	455.61	919.96	1569.80	2520.45	5010.20
2016-17	972.60	1012.26	1642.71	850.10	3505.07
2017-18	383.09	603.27	1692.41	2025.64	4321.32
2018-19	547.16	755.27	1918.29	2435.19	5108.75
2019-20	308.56	756.54	2281.86	1288.03	4326.42
2020-21	143.60	759.79	2213.32	2847.33	5820.44
2021-22	112.80	463.95	2612.87	1743.70	4820.52
Total	7625.24	7762.99	19138.69	19177.02	46078.70

The department also has an independent Evaluation Cell headed by an officer of the rank of C.C.F at the Head office. Annual evaluation reports on various plantation activities are provided. These evaluations are guided by the 1969 Evaluation Code.

9.8 EXISTENCE OF MONITORING, ASSESSMENT AND REPORTING MECHANISM

Monitoring and assessment is done at Range Forest Officer, ACF and DCF levels, CF (T) and CF (WP) as per GR No. Sankirna – 2011 / F.No. 289 / F-7, Dt. 29/09/2011.

9.9 PUBLIC AWARENESS AND EDUCATION

Public awareness is carried out by the Division and the Social Forestry Wing of the department in the district. As per information from the Dy. Director of the SFD, a total of 250 schools in Yavatmal district have Eco-clubs as part of the National Green Army Scheme of the Government of India. In each of the Club, there are at least 50 members. In these schools regular year around programmes are held and all important days related to the environment and forests are celebrated enthusiastically. Regular field visits and projects are also taken up. Seed banks are established in such schools.

The Division celebrates Van Mahotsav and Wildlife Week on a regular basis and various programmes such as essay writing, painting competition, extempore and speech competitions are organized.

9.10 ADEQUATE MANPOWER IN FOREST DIVISION

9.10.1 STAFF

In Yavatmal Forest Division, there is a post of Deputy Conservator of Forests, assisted by three Assistant Conservator of Forests who are class-I officers and 11 Range Forest Officers who belong Class II (Gazetted) category. Out of these 11 Range Forest Officers in the Division, eight are in charge of territorial ranges. Among the remaining three RFO's, one holds the charge of mobile squad with headquarters at Yavatmal, another is depot officer of Jodmoha Depot with headquarters at Jodmoha and the third RFO holds charge of RFO(EGS) with headquarters at Darwha. The details of the staff and the manpower, in the Division, as on date, are given in the table below:

TABLE NO.9.6: PRESENT STAFF POSITION IN THE YAVATMAL DIVISION

Sr. No.	Name of Post	No. of Post/posts				
		Sanc.	Perm.	Temp.	Filled	Vacant
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Class – I					
1	DCF	1	1	0	1	0
2	ACF	3	3	0	3	0
	Total – I	4	4	0	4	0
	Class – II					
1	RFO	11	11	0	11	0
2	Office Superintendent	1	1	0	0	1
	Total – II	12	12	0	11	1
	Class –III					
1	Forester	48	48	0	47	1
2	Forest Guard	161	161	0	143	18
3	Chief Accountant	1	1	0	0	1
4	Accountant	11	11	0	10	1
5	Clerk	21	21	0	18	3
6	Surveyor	2	2	0	1	1
7	Jeep Driver	6	6	0	6	0
8	Armed Police	1	1	0	0	1
9	Truck Driver	1	1	0	1	0
10	Tractor Driver	2	2	0	1	1
11	Statistics	1	1	0	0	1
	Total – III	255	255	0	227	28
	Class – IV					
1	Naik	1	1	0	1	0
2	Daftari	0	0	0	0	0
3	Peon	2	2	0	1	1
4	Mali	1	1	0	1	0

Sr. No.	Name of Post	No. of Post/posts				
		Sanc.	Perm.	Temp.	Filled	Vacant
(1)	(2)	(3)	(4)	(5)	(6)	(7)
5	Watchman	2	2	0	2	0
6	Choukidar	1	1	0	0	1
7	Tractor Cleaner	1	1	0	1	0
8	Truck Cleaner	1	1	0	1	0
9	Vanmajur	141	141	0	0	0
	Total – IV	150	150	0	7	2
	Grand Total	421	421	0	249	31

9.10.2 LABOUR SUPPLY

The labour supply in this division is fairly satisfactory in all seasons except during the rainy season when the agricultural operations coincide with plantation works. The labour force required for various forestry operations are available from the adjoining villages. Departmental works like cut back operations, road repairs etc are carried out by engaging locals. The labourers of some villages are skillful in carrying out forestry operations, as they have been doing these operations since long time.

CHAPTER 10

FIVE YEAR PLANS

10.1 Forest was a subject of state list till 42nd amendment to the Constitution of India in 1976. State used to look after the protection, development and management of all the forest resources and generate revenue to its exchequer. Forest was managed even before independence on scientific lines in consonance with the prepared Working Plans. The emphasis before independence was on improvement of forest and exploitation of matured and valuable timber species. The exproprietary forest was also brought under the purview of the management after independence. Wildlife was treated as a source of recreation. Till late 70's of last century, no plan funds were allocated to the forest sector. In this area, forest was very dense and was utilized for meeting the demands of the local people for forest produce. In this area, silvicultural operations were given priority and protection and fire protection was very much emphasized. With the introduction of plan, lot of developmental activities have been taken up. Forestry sector remained as revenue generating sector and very little amount through non plan expenditure was incurred on forestry sector.

The brief account of the management during the past five year plans is given below:

10.1.1 FIRST FIVE YEAR PLAN (1951-56)

First five year plan was aimed at rehabilitation of degraded forests, introduction of economic species, survey and demarcation of the forest area. The impact of the first Five Year Plan is not noticeable, as the flow of funds was never made available for requisite achievement of management prescribed in the Working Plan. During this period the forest was managed as per the Working Plan of Robinson.

10.1.2 SECOND FIVE YEAR PLAN (1957-60)

The second five year plan also emphasized rehabilitation of degraded forests, introduction of economic species, survey and demarcation. During second five year plan Thosre's Plan was implemented. During this period systematic management of forests was introduced. Silvicultural operations were given importance in forest management. Plan funds were not allotted for the operations of forest management. Some of the forest land was allotted to local villagers to raise agri-silvi plantations.

10.1.3 THIRD FIVE YEAR PLAN (1961-66)

Third five year plan emphasized on increasing productivity of forests by taking up plantations of fast growing species. Scientific assessment, modern logging methods were adopted for extraction of timber. Forest land was given to villagers for cultivation of agricultural crops and during this period lot of land had been allocated for agricultural purposes. Agri-silvi plantations were continued during this period as well. Thosre's Plan was under implementation. Plan funds were not allotted to any operation of forest management. The plantations were raised during this period under non-plan funds. During this period the old Yavatmal division was bifurcated into East Yavatmal and West Yavatmal Divisions.

10.1.4 THIRD FIVE YEAR PLAN (1966 TO 1969)

Thosre's Plan was under implementation during this period. There was severe drought condition and the local people were reeling under poverty as agricultural crops completely failed, resulting in lack of employment to agricultural labourers. The main thrust of the Government was to provide work and civil amenities to people. Efforts were made to provide employment to the people in forestry operations.

10.1.5 FOURTH FIVE YEAR PLAN (1969 - 1974)

This five year plan aimed at increasing productivity of forests by introducing fast growing species in plantations, assessment of forests on scientific lines and

modernising logging operations. During this period the administration of forest villages was brought under Revenue Department. New approach in forestry sector emerged to divert revenue for the development of forests. Forest Development Board was formed in 1969 and it was converted into Forest Development Corporation of Maharashtra Ltd in 1974. Many successful plantations were raised during this period and no direct funding was made available from the plan components.

10.1.6 FIFTH FIVE YEAR PLAN (1974 - 1979)

Thosre's plan continued up to middle of this plan period and later Pal's plan was under implementation. The forestry sector in this five year plan aimed at large scale plantations, social forestry and forest conservation. Social Forestry wing was established during this period to involve people, to raise plantations on the lands outside forest i.e. community land, government waste land etc. The State Government introduced Employment Guarantee Scheme (EGS) to provide employment to local people. During this period successful plantations were raised by the Forest Department.

10.1.7 ANNUAL PLAN (1979 – 1980) AND SIXTH FIVE YEAR PLAN (1980-1985)

During this period there was thrust to save natural forests by providing alternative sources of forest produce through social forestry activities. The decision for regularising encroachments on forest land from 1/4/1972 to 31/3/1978 was taken up during this period. This decision has aggravated the problem of encroachment and many people resorted to encroachment keeping in mind that these encroachments would be regularised in future. In western part of the division Pal's Working Plan was under implementation during this period, whereas in eastern part of the division Kanekar's Working Plan was under implementation. Successful teak plantations were raised under plan scheme of GUT (General Utility Timber) during this period. However, the budget allocation under plan schemes was meagre, not even 1 % of the total plan budget of the district. During this period, Forest (Conservation) Act 1980 was enacted. The reorganisation of forest divisions was

effected, Yavatmal Forest Division was carved out from East Yavatmal and West Yavatmal Divisions.

10.1.8 SEVENTH FIVE YEAR PLAN (1985-1990)

During this period, Pal's and Kanekar's Working Plan were under implementation. The Emphasis was laid on forest conservation, massive afforestation and waste land development. Massive afforestation was taken up under EGS and other plantations were taken up under district plan schemes. The infrastructural facilities like communication, transportation, buildings, etc. were improved. The forest management activities were affected as Government of India imposed ban on clear felling of naturally grown forests. The implementation of Forest (Conservation) Act 1980 gained momentum and the forest dwellers were of the opinion that the forests and the Acts for conservation of forests were hindering the process of development. Plan funds were allocated for the developmental activities under district plan scheme.

10.1.9 EIGHTH FIVE YEAR PLAN (1992-1997)

This plan aimed at protection of forests against biotic interference, utilisation of waste land for forestry activities, creation of awareness among people for forestry through JFM and conservation of biodiversity. World Bank aided Maharashtra Forestry Project was implemented which helped in improving infrastructural facilities i.e. communication, transportation, building, etc. and introduction of modern techniques in forestry i.e. root trainer nursery, clonal nurseries, germ plasm banks etc. Various GRs were issued for implementation of JFM from time to time. Funds from district plan schemes were made available for the various activities like plantations, roads, buildings etc. Under EGS lot of funds were made available for plantations, soil and moisture conservation works.

10.1.10 NINTH FIVE YEAR PLAN (1997-2002)

The aims of eighth five year plan were carried forward to ninth five year plan as far as forestry sector was concerned. The State Government initiated different

schemes for development of forestry sector in consonance with Central Government schemes. The World Bank Project was completed during this period. The plantations of both teak and misc. species were taken up under various schemes. Funds from the district plan were made available. During this period Yadav's Plan was in force.

10.1.11 TENTH FIVE YEAR PLAN (2002-2007)

Yadav's Plan was under implementation during this Plan. This five year plan gave thrust on JFM through the Forest Development Agency. In Yadav's Plan numerous soil and moisture conservation works were prescribed and accordingly some works were taken up under various schemes. The flow of plan funds had come down drastically.

The national forestry action programme was formulated to establish linkage between National Forest Policy and five year plans. The budget outlay for forestry sector was hardly 0.032 % of total outlay in fifth five year plan and it increased to 0.94 % in eighth five year plan.

10.1.12 ELEVENTH FIVE YEAR PLAN (2007-2012)

The monitorable target of the 11th five year plan was to increase the forest cover by 5% of the total geographical area. This would require an additional cover of about 16 million ha. Out of this, 5 million ha could be brought under the tree cover within the recorded forest area while the rest would be added through agro forestry and social forestry. However, the policy target is to have 33% forest and tree cover which will require an additional coverage of about 10–11 million ha. This will have to be done mainly outside the recorded forest area. The target of 33% forest and tree cover reflects the tree component without accounting for other vibrant non-tree natural biomes like grasslands. The amendment of the target of the 1952 policy, of one-third area under forests, to forest/tree cover resulted in a shift of focus from ecological habitat to tree cover. Further, recognition of biodiversity characteristics and ecological services rendered by habitats like grasslands, natural desert ecosystems, alpine, and riparian habitat suggests that several biomes, even if devoid of tree component, can be recognized as 'green cover' and accounted. Recognizing

these facts, the following strategic principles will be adopted for dealing with the green cover:

1. The policy objective of 33% tree/forest cover should be revisited for its definition on ecological considerations.
2. The green cover should include the existing natural ecosystems within which the tree cover constitutes a sub-set.
3. Enabling environment for social and participatory regimes should be the aim of Central efforts, as is being done through JFM mode under the National Afforestation Programme.
4. Implementation of the Central programmes has met with difficulties on fund flow management at the State level. It is advisable to undertake activities in project mode with earmarked funding, as is done in the externally aided projects.

Ministry of Environment and Forests had an approved outlay of Rs. 10,000.00 crores for the 11th five year plan, during 2007-12. Annual plan 2007-08 had an approved outlay of Rs. 1,351.00 crores against which the actual utilization amounted to Rs. 1,349.73 crores. In 2008-09, an outlay of Rs. 1,500.00 crores was allocated, against which the actual utilization amounted to Rs. 1,483.02 crores. Annual plan 2009-10 had an approved outlay of Rs. 1,880.00 crores, reduced at revised estimate stage to Rs. 1,650.00 crores, against which the actual utilization amounted to Rs. 1,630.69 crores. Annual plan 2010-11 had an approved outlay of Rs. 2,200.00 crores, against which the actual utilization amounted to Rs. 2,181.58 crores. In the last year of the 11th plan, the Annual plan 2011-12 had an approved outlay of Rs. 2,300.00 crores, against which the actual expenditure amounted to Rs. 1825.44 crores.

While the gaps are huge, potential for improvement of productivity exists. The status of green cover is an indicator of status of productivity of forests. The following strategies have been evolving in the sector for improving the status of green cover.

PARTICIPATORY FOREST MANAGEMENT OR JOINT FOREST MANAGEMENT (JFM)

Initiated with the circular of the MoEF on June 1, 1990 on people's involvement in forest conservation and management, the JFM regime has evolved gradually and about 106479 such committees (22 million participants) are functioning in 28 States covering 22.02 million ha of forests. This participatory regime is seen as a potential strength of forest management for the forest fringes. The challenge now is to effectively empower the local communities with appropriate rights and responsibilities, and ensure that substantial benefits from forest conservation accrue to them.

A similar approach has been attempted in wildlife management as well. In Project Tiger, eco-development project was implemented during 1995-2005 under Global Environment Facility (GEF) with focus on village eco-development through optimum utilization of local resources and involvement of local people in conservation of protected areas. Integration of this approach to protected area management through shared decision-making and full integration of conservation and livelihoods across the landscape are yet to be realized. Also, the recognition of a large range and diversity of community traditions or new initiatives towards conservation is very weak.

The first five year plan, as far back as 1951, indicated the scope for establishment of village plantations. Subsequently, a series of externally aided social forestry projects during the 1980s and allocation of 25% of District Rural Development Agency funds under National Rural Employment Programme, Rural Landless Employment Guarantee Programme, and so on, for social afforestation provided impetus to social forestry. This provision was not pursued since the Eighth Plan. Regeneration of forests and growing of trees being a long-term activity, did not receive due focus in the rural development programmes. Even the Watershed Management Programme aims more at equitable sharing and caring of watershed benefits, and afforestation remains a latent component. The cost norms of these programmes are not able to support substantial afforestation activities requiring strong wage contribution.

AGRO AND FARM FORESTRY: The social forestry programmes also include extension and promotion of agro and farm forestry in the farm sector. The farmers of the States like Punjab, Haryana, Himachal Pradesh, Uttar Pradesh, Karnataka, and Tamil Nadu have adopted agro forestry. However, the forward linkages with the user industry and facilitation by the State agencies have not existed. Thus, the sector suffers from problems of unorganized markets driven by middlemen, depriving the farmers of optimum prices for their produce.

BIODIVERSITY

Habitat conversion or land use changes, land degradation, and pollution result in the decline of ecological goods and services needed for human welfare. The Biological Diversity Act, 2002 and Rules, 2004 provide for the constitution of State Boards (SBBs) and Management Committees (BMCs) for conservation, documentation and sustainable utilization of biodiversity and for building up capacities of these bodies. Chronicling in the form of People's Biodiversity Registers will be the only way we can identify changes happening due to climate change. There is a need to develop appropriate methodology and models for conducting such an exercise. Documentation of traditional knowledge should also include adaptation of such knowledge in line with the present needs of conservation.

CONSERVATION OF NATURAL RESOURCES AND ECOSYSTEMS: Inland aquatic systems (excluding paddy fields) cover 5.3% of the country's land area but harbour 15% and 20% of India's floral and faunal diversities, respectively. There are wide gaps in knowledge relating to hydrological parameters, ecosystem processes, and aquatic life forms in these systems. Information on the physico-chemical aspects of water quality in rivers and lakes has become available largely because of the support from the National River Conservation Directorate (NRCD) and the CPCB, but that on aspects such as area, depth, hydrology, and environment and climate change ecosystem processes and functions is practically non-existent. The existing programmes on conservation accordingly need a revamp.

The Scheme on Conservation and Management of Mangroves, Coral Reefs, and Wetlands has been too small to make an impact on the conservation of these ecosystems. Mangroves and coral reefs are mainly found on government lands. Development of appropriate institutions to motivate people to co-operate in the conservation efforts of these systems will be a priority area. More protected areas are needed for the conservation of coral reefs. Restoration and plantation programmes for mangroves are necessary to make these eco-systems function as effective barriers against invasion of land by sea. The existing programmes on wetlands, mangroves, and coral reefs will be extended to mountains, grasslands, and alpine ecosystems. Initiatives on conservation need to be more effectively integrated with development and poverty reduction. The principles of Community Reserves under the Wild Life (Protection) Act, 1972 may be useful in such efforts. Long-term plans for conservation of such habitats will be important. Wetlands will be part of NLCP and the objectives will cover conservation of life forms apart from mitigating pollution and augmenting catchments. An information system will be set up for islands, coral reefs, mangroves, and wetlands by developing a consolidated and easily accessible database of all recorded species. Support activities will include participatory research for inventory and valuation of freshwater ecosystems, measures to tackle serious threats to them and ensure conservation, as also the livelihood security of dependent communities. With regard to linkage between biodiversity and climate change, it should be recognized that biodiversity is an important tool to find solutions for tackling the impact of climate change on rural populations that depend on biomass for their livelihood. There is a need to recognize the potential of biodiversity to provide solutions for adaptation in the form of traditional crop varieties and donors for creating GMOs.

National agro biodiversity hotspot mapping and identification of important agro biodiversity landscapes will be undertaken for conservation with the participation of farmers and pastoralist groups. Regions with high concentration of genetic diversity on major and important crops may be declared as 'gene sanctuaries' for conservation and enrichment of diversity, involving communities through diversity based income generation and incentives. The regulatory

mechanism for trials and adoption of GMOs will be required to be based on scientific, socio-economic, and EIA in the long as well as short term. The process of a regulatory regime, therefore, should be consultative and transparent, based on the prescribed scientific, logical, and progressive norms, taking into account factors of human health and environmental health. Awareness generation will be important for ensuring effective outreach of the prescribed process for promotion of appropriately and adequately tested GMOs, mechanisms for enforcement of procedures, and processes for safeguarding ecological and health safety will be established.

10.1.13 TWELTH FIVE YEAR PLAN (2012-2017)

The 12th Plan has the basic theme of “Faster, Sustainable, and more Inclusive Growth”, and lays out major targets, key challenges to meet them, and the broad strategy that may be followed to achieve the stated objectives. Ministry of Environment and Forests has allocated an outlay of Rs. 17,874.00 crores, which works out to 0.41% of the plan allocation across various Ministries/Departments as against a share of 0.42% or Rs. 9231.00 crores in the 11th plan. At current prices, the enhancement in this Ministry’s 12th plan outlay over the 11th plan outlay, however, works out to 109%.

12th plan has identified 13 Monitorable Socio-Economic targets for this Ministry, which has been taken up for regular monitoring of progress made by the Ministry. These targets are as follows:

ENVIRONMENT AND CLIMATE CHANGE

1. Assess and remediate 12 identified contaminated sites (hazardous chemicals and wastes) with potential for ground water contamination by 2017.
2. Clean 80 per cent of critically polluted stretches in rivers by 2017 and 100 per cent by 2020.
3. States to meet National Ambient Air Quality Standards (NAAQS) in urban areas by 2017.

4. To reduce emission intensity of Gross Domestic Product (GDP) in line with the target of 20 to 25 per cent reduction over 2005 levels by 2020.

FORESTS AND LIVELIHOOD

5. Greening 5 million ha under GIM including 1.5 million ha of degraded lands, afforestation and eco-restoration of 0.9 million ha of ecologically sensitive areas.
6. Technology-based monitoring of forest cover, biodiversity and growing stock including change-monitoring on periodical basis through dedicated satellite by 2017 and establishment of open web-based National Forestry and Environmental Information system for research and public accessibility by 2015.
7. Engagement of Village Green Guards/Community Foresters for every Joint Forest Management (JFM) village by 2016.
8. Establish forestry seed bank in forest circles and Model Nursery in every district with information on public portal by 2014.

WILDLIFE, ECOTOURISM AND ANIMAL WELFARE

9. Twenty per cent of veterinary professionals in the country will be trained in treating wildlife.
10. Integrated Ecotourism District Plans covering 10 per cent of all potential Protected Areas (PAs) by 2017.
11. Promoting participation of private sector, civil societies, NGOs and philanthropists in animal welfare.

ECOSYSTEM AND BIODIVERSITY

12. Restore 0.1 mha. of wetlands/inland lakes/water bodies by 2017.

13. Mapping and preparation of biodiversity management plans for deserts (both cold and arid), coastal areas, important coral zones, wetlands, mangroves and so on to be completed by 2017.

Besides, 14 Goals have also been identified in the Plan Document, which would receive focus and special attention, inter alia, through the Annual Plans of the Ministry. These 14 Goals are set out below:

1. Epidemiological studies to assess improvement in health status due to better management of environment and ecology.
2. Promotion and adoption of cleaner technology, strengthening and initiation of reforms in regulations, policy making and enforcement institutions for environmental governance.
3. Move towards cumulative and strategic Environmental Impact Assessment (EIA).
4. Ensure ecological flows in all rivers by regulating abstractions so as to allow conservation of riverine ecosystems through developing a legal framework and management strategy for conservation of river basins.
5. Promotion of recycling and reuse of treated sewage in urban projects such as sanitation, landscaping, central air conditioning and so on.
6. Improve forest productivity, production and sustainable management of biodiversity (equity in access to benefit sharing with local people).
7. Restore and intensify forest-rangelands/ grazing-land management and establish community grazing land around forest fringe villages.
8. Build capacity of Village Forest Committees/ Joint Forest Management Committees (JFMCs) for management of forest resources including ecotourism.

9. Revive seed orchards and silviculture plots for various forest types of the country, as well as for enlisted species under Minor Forest Produce (MFP)/ Non Timber Forest Produce (NTFP), including genetic improvement, and establishment, of clonal orchards.
10. Reducing and managing human–wildlife conflict.
11. Commercialisation of permissible marine products rich in poly unsaturated fatty acids (PUFAs), vitamins and so on.
12. Promotion of ecotourism and participatory eco-development support livelihood of local population.
13. Develop national targets and indicators related to biodiversity and support actions to strengthen implementation of Biological Diversity Act, 2002 and ensure bio-safety for economic and social development of local communities.
14. Assess coastal biodiversity resources, ensure sustainable management, restoration of mangroves, coral reefs and wetlands and support livelihood.

The progress made under the various schemes implemented by Yavatmal Forest Division under the 12th Plan is given below.

TABLE NO. 10.1: Progress under various schemes in 12th five year plan

Sr. No.	Name of Scheme	Financial (Rs in lakhs)				
		2012-13	2013-14	2014-15	2015-16	2016-17
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(2406 Forestry and wildlife) (State)						
1	Strengthening of check nakas	0.00	0.00	0.00	0.00	0.00
2	Strengthening of existing wireless network	0.00	0.00	0.00	0.00	0.00
3	Supply of cooking gas	0.00	0.00	14.57	25.53	41.20
4	Joint Forest management	17.19	16.70	14.50	20.80	32.14
	Total	17.19	16.70	29.07	46.33	73.34

Sr. No.	Name of Scheme	Financial (Rs in lakhs)				
		2012-13	2013-14	2014-15	2015-16	2016-17
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Centrally Sponsored Scheme						
1	Modern Forest fire control and management (IFPC)	13.31	0.00	6.26	21.60	6.34
2	National Afforestation programme	42.12	23.85	2.43	0.00	0.00
	Total	55.43	23.85	8.69	21.60	6.34

Sr. No.	Name of Scheme	Financial (Rs in lakhs)				
		2012-13	2013-14	2014-15	2015-16	2016-17
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(2406 Forestry and wildlife) (State)						
1	Supply of cooking gas	64.88	54.15	73.04	24.03	16.77
2	Vidarbha vikas	43.98	0.00	0.00	0.00	0.00
	Total	108.86	54.15	73.04	24.03	16.77

Sr. No.	Name of Scheme	Financial (Rs in lakhs)				
		2012-13	2013-14	2014-15	2015-16	2016-17
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(2406 Forestry and wildlife) (State)						
1	Soil and moisture conservation on forests areas	0.00	0.00	0.00	0.00	0.00
2	Establishment of central nursery	3.31	49.54	9.16	6.00	10.79
3	Forest protection from fire	29.71	68.91	30.38	65.44	34.18
4	Reforestation of degraded forest (RDF)	102.65	118.16	117.69	374.86	259.41

Sr. No.	Name of Scheme	Financial (Rs in lakhs)				
		2012-13	2013-14	2014-15	2015-16	2016-17
(1)	(2)	(3)	(4)	(5)	(6)	(7)
5	Development of Forest Tourism	588.69	318.43	290.57	82.34	74.56
6	Compensation to the formers for losses caused by wildlife	99.23	123.72	184.85	253.74	309.54
	Total	823.59	678.76	632.65	782.38	688.48

Sr. No.	Name of Scheme	Financial (Rs in lakhs)				
		2012-13	2013-14	2014-15	2015-16	2016-17
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(2406 Forestry and wildlife) (State)						
1	Joint forest management	0.00	0.00	0.00	0.00	0.00
2	Plantation of general use	0.00	0.00	0.00	0.00	0.00
	Total	0.00	0.00	0.00	0.00	0.00

Sr. No.	Name of Scheme	Financial (Rs in lakhs)				
		2012-13	2013-14	2014-15	2015-16	2016-17
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(2406 Forestry and wildlife) (State)						
1	Construction of Van Talao	0.00	0.00	0.00	0.00	0.00
2	Massive Afforestation programme	76.93	87.16	296.45	925.02	418.15
3	Afforestation for soil conservation	23.68	18.52	0.79	2.07	0.00
	Total	100.61	105.68	297.24	927.09	418.15

Sr. No.	Name of Scheme	Financial (Rs in lakhs)				
		2012-13	2013-14	2014-15	2015-16	2016-17
(1)	(2)	(3)	(4)	(5)	(6)	(7)
4406 Forestry and Wildlife						
1	Forest Building (Repairs)	7.78	9.93	9.01	0.00	18.81
2	Soil and water conservation on forests areas	0.00	40.67	0.00	0.00	0.00
3	Forest roads & bridges (4406-4415)	1.38	1.35	5.85	4.36	15.32
4	Forest Protection from fire	29.71	68.91	30.38	65.44	34.18
5	Wildlife & nature conservation	23.68	18.52	0.79	2.07	0.00
6	Development of Forest Tourism	0.00	0.00	315.08	78.51	205.76
	Total	62.55	139.38	361.11	150.38	274.07

10.2 THREE YEAR ACTION AGENDA BY NITI AAYOG

India's developmental planning, which started in 1951, came to a conclusion in March 2017 with the end of the Twelfth Five Year Plan. After the dissolution of the Planning Commission, the government decided to set its development priorities and instrumentalise those priorities through the NITI Aayog. One of the major mandates of the NITI Aayog is "to design strategic and long-term policy and programme frameworks and initiatives." In this direction, the NITI Aayog was advised to prepare a 15-year vision document, a seven-year strategy, and a three-year action agenda. Towards achieving this end, the NITI Aayog formulated a "Three Year Action Agenda, 2017–18 to 2019–20" in August 2017. The document proposes a set of action points for policy and institutional reforms in various sectors of the economy (NITI Aayog 2017).

It Envisages the Following

1. No clear measurements of afforestation programmes about their impacts and effectiveness are seen because there are no acceptable standards for making the information and impacts, transparent and easily measurable. To achieve this, it is proposed to develop an open source digital database/app for documentation by local forest managers. This includes demarcation of forest boundaries using GPS, entering photographs and other data which would be open to the public.

This can enhance adoption by community and private forest managers who can get financial support from investors by documenting their achievements. After tests the app can be adopted to manage forests and also afforestation programmes.

2. The existing laws put restrictions on felling, transport and sale of trees, thus discouraging plantations by farmers and also prevents long term investment in community managed forests. These should be removed for private lands. These may be restricting conversion of indigenous ecosystems to exotic monoculture but at high economic cost. Furthermore, by restricting entry of private timber and pulp plantations, they impose pressure on native forests.

3. A better strategy to prevent such conversion to monoculture would be to develop incentive to maintain native forests. This would encourage farmers and communities to document their ecological wealth.

4. Linear projects that cut through forests should be required to incorporate mitigation measures at all stages thus allowing projects to go ahead without cutting off migration corridors.

5. Unified policy about invasive alien species that cause enormous damage to crops and ecosystems cutting across all related sectors.

CHAPTER – 11

PAST SYSTEMS OF MANAGEMENT

11.1 GENERAL HISTORY OF THE FORESTS

Berar was assigned to the British in 1853. In 1865 an ACF was appointed for the entire forests of Berar under the administrative control of Central Provinces. For the first few years, some forest reserves were demarcated. In 1871, for the first time forest rules were applied in this area to protect forests from encroachment, illicit felling and grazing. In 1873, fire protection was introduced in these forests. In 1880 the forests and waste lands outside the regular reserved blocks were divided into A and B Class forests. Subsequently these were transferred to A Class and all these forests under A Class were set aside for production of timber, fuel and fodder. The classification of forests is as under.

Class-I

A class : Reserved for production of timber and fuel and closed for grazing.

B class : Reserved for production of grass and closed for grazing.

C class : Reserved for fire wood and for the production of timber and fuel.

Class-II : For free grazing lands.

This classification appears to have been completed in 1884 but area so selected was not notified till 1892. This classification worked well until the year 1900. The cotton prices rose with the increase of land under cultivation, the grazing area was curtailed while the livestock increased until the free grazing and class – I land could no longer sustain increasing pressure of grazing. The grazing incidences increased from 1.37 acre per head in 1896-97, 0.74 acre in 1906-07. Under these circumstances, the free grazing areas of Class-II were either transferred to A class or

given out for cultivation or transferred to E Class (Village free grazing land not under the forests). The new class of forest “Class D” was also formed and subsequently this was amalgamated in C class in 1911. In the rest of the Yavatmal District there were no free grazing areas i.e. Class-II existed and no regular enquiry was held. Land suitable for cultivation was disforested; some of the waste lands were afforested and new A Class blocks formed out of C Class on a small scale.

In 1913 the CCF inspected Yavatmal forests and had concluded that A Class forest area was insufficient to meet the growing demand for timber and increasing population. Subsequently a joint enquiry by a Revenue Officer and the Working Plan Officer was held and as a result of which about 1/3rd area of C Class was transferred to A Class. Disforestation and exchange of land had taken place subsequently with the main object of releasing or exchanging the area suitable for cultivation, simplifying boundary and removing inconvenience to villagers with A Class reserved forests.

For a long time the ex-private forests were under the control of private owners, which were subjected to heavy felling and the grazing, resulted in gradual disappearance of tree growth and the grazing lands were degraded. During IInd World War demand for Teak, Salai and miscellaneous poles increased and heavy exploitation was carried out without considering regeneration of the forests. Some of the exproprietary forests survived even after heavy exploitation, which were subsequently taken over by the Forest Department.

11.2 PAST SYSTEMS OF MANAGEMENT AND THEIR RESULTS

11.2.1 PRE-WORKING PLAN PERIOD (1865 – 1914)

Prior to 1865 there was no regular forest management and administration in this area. The regular forest administration was initiated in Yavatmal District in 1865 when forest reserves were originally formed. The main object of the forest management was to restore the degraded forests by giving them complete rest from felling and by protecting forest against fire and the grazing. However, extraction of the dead wood for meeting demand of sleepers on a small scale was carried out in

Pathrot area. The areas were completely closed for grazing. By the year 1900 it was realised that A Class blocks which were completely closed to felling and grazing was run at a loss without improvement works. Subsequently a Provisional Felling Scheme was drawn up for the blocks having demand for forest produce. The system was improvement felling under 20 years rotation in order to prepare the forests for working under Coppice With Standards. The working of the forests was started in 1901 in Pathrot, later on in Jamb, Umarda, Chausala, Dabhadi, Kharoni, Barad, Pokharni, Fiski, Gari and Lonbehel blocks. The system adopted was to mark the trees to be retained and offer rest of the crop for sale on cost to the public. Silvicultural operations like cut back operations were undertaken. The system was in force for 14 years and it was beneficial from the point of revenue and expenditure. In the famine in 1919 due to scarcity of fodder, some of the A Class forest was opened for grazing and since then there has been a general practice of allowing cattle in A Class forests. The work was introduced with 3 working circles, one each for teak area, other species and one for scrub forests. The system adopted was retention of good teak trees, trees of reserved species and the rest of trees were permitted to be cut by the purchasers. The system had worked very well till the year 1900 and brought considerable revenue. But the system gradually became unworkable due to transfer of areas from C Class to A Class, made the felling series incomplete and heavy grazing destroyed the coppice in worked coupes. Moreover lack of intensive supervision (as no Forest Guards patrolled C Class) resulted in heavy illicit felling coupled with bad coppicing.

11.2.2 POST WORKING PLAN PERIOD (1915 – 16)

The regular Working Plan to manage forests started in 1915 for the treatment to the forests, considering needs of the local population, policies and rules laid down by the Government.

11.2.3 MALCOLM'S WORKING PLAN (1915-16 TO 1937-38)

In 1914 it was decided to replace the previous schemes in order to have effective management by one Working Plan. The preparation of Working Plan was

entrusted to Mr.C.A.Malcolm, IFS and his plan was introduced in 1915-16. These forests were managed as per the prescriptions of Malcolm Working Plan for 23 years. In this plan grazing was recognised as an important demand and efforts were made to fulfill the grazing demands. In this plan, the forests were divided into 49 felling series, dividing each felling series into approximately 30 coupes. Several small under stocked areas were not included in coupes but were left open for grazing to provide large area for grazing in view of excess cattle population. The cycle of closures to grazing and the sections of coupes were determined with a view to provide maximum grazing facilities to the local cattle. At the same time some of the blocks, where heavy grazing was noticed, closure for 5 to 6 years was prescribed in the Working Plan. In other areas the closure was increased to 10 and 15 years. In some blocks large under stocked areas were developed into additional coupes, generally large in size and which were brought under periodical closures. Cut back operations after main felling were prescribed. Cleaning & thinning were also recommended in the Working Plan but no regular system was prescribed. The method of exploitation to mark the trees for retention when the coupes were open to purchasers and allowed them to fell any unmarked tree within the coupe. Cut back operations were also carried out in the following year. As the system had inherent disadvantages, it was gradually replaced by the departmental felling which included cut back operations.

Under the previous system some coupes were marked, felled by the purchasers, coupled with poor or lack of supervision of the department led to deterioration of the crop. Practically some areas were not worked by the purchasers. Heavy exploitation was organized after the 1st World War until 1929. In every felling series the demand was full and made it possible to carry out thinning and cleaning especially in better teak areas. These felling resulted in replacing all over matured and malformed crop with a new well grown even aged forests, with coppice. However, in poorly stocked open grassy areas, which were filling up slowly, they caused lot of damage by giving setback to the process of recovery. Moreover, as a result of heavy felling, forests were over exploited and as a result of which the crop is now young to middle aged.

RESULTS:

The growing demand for forest produce had resulted in heavy felling in certain areas. Heavy felling resulted in replacing old crop with the new, well grown coppice forests in well stocked and dense areas. But in poorly stocked and open grassy areas the process of recovery was slow. As a result of heavy felling, the forests were over exploited. The crop in most of the better quality area was young to middle aged.

11.2.4 ROBINSON'S WORKING PLAN (1938-39 TO 1955-56)

Malcolm's Plan was revised by Shri. Robinson, which came into force in 1938-39. Shri. Robinson prescribed management of the forests keeping in view firstly, the interest of local population and secondly, the interest of general living. The general objects of management of Shri. Robinson's Plan were as under.

- To obtain sustainable annual out turn of forest produce mostly in demand by the local people, principally timber, fuel wood, grass, bamboo and other minor forest produce.
- To meet the demand of grazing for local cattle population.
- To maximize the revenue.

All A Class forests had been worked according to its prescriptions under this plan. A Class forests were categorised into 3 types Viz (1) Good quality teak forests, (2) Medium quality teak forests, (3) Poor quality teak and mixed forests. The brief prescriptions and the results of working are given below.

(1) COPPICE WC

It included low quality teak and mixed forests generally belonging to site quality IVb, and V. The area was divided into 48 complete and 8 half felling series with former consisting of 40 annual coupes and latter 20 annual coupes each. The area was to be worked under "Coppice with Reserves" system, in place of "Coppice with Standards" system which was practiced earlier. The rotation age for teak was

fixed at 40 years by which time it achieved the girth of 25 inches at bh. Upto 20 well grown teak and miscellaneous trees per area will be retained in teak forests and upto 25 trees per acre were retained in the mixed forests which were worked only if there was a sufficient demand.

RESULT:

The prescriptions proved to be quite suitable for these forests except for thinning which at times were quite heavy.

(2) GENERAL HIGH FOREST WC

It included medium quality teak forests, generally of site quality IV a and IV b with young to middle aged crop. The WC was divided into 6 Felling Series. The forests allotted to this WC were to be converted into a series of even aged crop in 60 years. It was divided into 3 periodic blocks (PB) of 20 years each. PB – I included roughly 1/3rd of the workable area which was divided into 20 equiproductive annual coupes. Rest of the areas for PB-II and PB-III were unallotted and were to be worked by compartments on a 20 years cycle where in thinnings and selection felling (over 3 ft. gbh.) were to be carried out. In PB – I, teak areas capable of being regenerated from NR supplemented by coppice were to be clear-felled except for the poles upto 2 ft girth & above which were to be reserved and teak areas without much NR were to be thinned. Well stocked mixed forests were to be worked only if there was sufficient demand.

RESULTS:

Heavy thinnings and selection felling in unallotted areas without any regard to future yield led to disappearance of trees of bigger girth classes. Also as a result of the exploitation under Malcolm's plan and heavy selection thinnings under Robinson's plan, the area allotted to PB – I also had very low percentage of higher girth classes. Areas coming for working in PB – I after coupe no. XV, were found to be young and middle aged. The working prescribed was nothing but CWR since AR was not under taken anywhere as prescribed.

(3) PENGANGA HIGH FOREST WC

It comprised the best teak forests along the Penganga river mostly belonging to site-quality III. The object was to convert these forests into series of even aged crop in 80 years conversion period by clear-felling or concentrated regeneration felling supplemented by AR. Only one F.S. was formed. The rotation was fixed at 80 years considering an average girth of 5 ft. at bh could be attained during that time. The rotation was divided into 4 periodic blocks of 20 years each. PB – I comprised approximately 1/4th of the workable area bearing high population of mature trees and was divided into 20 annual coupes. No regular allotment was made to the other PBs which were to be gone over once in 20 years for heavy thinnings and selection felling (3.5 ft & above), compartment wise.

RESULTS:

Most of the area failed to regenerate satisfactorily. Most of the crop was found to be of coppice origin only. Also heavy thinnings and selection felling as prescribed in unallotted areas without any regard to the future yield led to the depletion of higher girth classes.

(4) MISCELLANEOUS WC

The ramnas were to supply grass to the neighbouring villages and would be closed to grazing, felling was to be carried only under the orders of Conservator of Forests. These ramnas were found to be very useful for meeting the great demand for fodder.

A) PASTURE FORESTS:

22 pasture series were formed. Each series was divided into groups of 4, 5, or 6 coupes closed to grazing in rotation for three years in alternation with 12, 15 and 18 years of grazing. Dense patches of trees in between were to be heavily thinned.

RESULTS: The prescriptions improved the pastures to a great extent but long periodic closures provided for improving the pastures led to the deterioration of tree growth in certain grazed blocks due to frequent severe fires.

B) In Tiwsala Reserve, 1850 acres of land had been planted with teak. The plantations are highly successful.

(5) BAMBOO (OVERLAPPING) WC

It included all the important bamboo bearing compartments. 8 F.S. were formed with each one further divided into 4 annual coupes. Bamboo was to be exploited under the standard prescriptions.

RESULTS: The prescriptions were found to be suitable.

(6) TEAK PLANTATION (OVERLAPPING) WC

It included part area of the Penganga WC and some adjoining areas suitable for raising teak. About 40 acres were to be planted with teak every year after clear-felling. Two cotton crops were also to be taken in the first two years of taking up teak plantation which covered the cost of teak plantation.

(7) BAMBOO PLANTATION (OVERLAPPING) WC

Suitable areas, permanently closed to grazing were chosen for bamboo plantation. *Dendrocalamus strictus* was the main species.

C CLASS FORESTS: This was area not dealt with in the Malcolm's Plan. Robinson prescribed thinning of congested crop wherever available and accordingly the work was done.

RESULTS:

Heavy thinning were carried out in the certain areas for supply of teak ballies, during IInd world war. In addition the absence of forest protection to 'C' Class area, resulted in the deterioration of the area.

11.2.5 THOSRE'S WORKING PLAN (1955-56 TO 1975-76)

Robinson's WP was revised by Shri. Thosre. Brief prescriptions and results of working of Thosre's WP are given below.

(1) COPPICE WITH RESERVES WC

Major portion of workable forest area was placed in this WC including the forests previously managed under General Teak High Forest WC. The rotation period was fixed at 40 years at which it would achieve girth (bh) of 60 cm. Under this WC 68 felling series were formed and each felling series was divided into 40 coupes. The coupes were worked through the contractor system except the coupes of ex Izara and C Class transferred to A Class, which were worked departmentally to meet the demand of small timber and fuel wood. Thinning was prescribed at 10th & 20th year after main felling for teak. The intensity of felling varied with density and necessity of cover for soil protection. Certain species were reserved against felling.

RESULTS:

The results were proved to be quite successful except for the following discrepancies. The contention that forests are capable of producing sound teak trees up to 60 cm in girth at 40 year rotation then becoming unsound was not correct. The forests that was included in Kharbi, Korat, Chikhali, Sondabhi, Morchandi, Masalga and Bhansara felling series of this working circle are capable of producing sound teak trees up to 105 cm girth. The thinning carried out was defective as it was more of revenue oriented thinning rather than silvicultural thinning, which resulted in over exploitation. No cleaning was prescribed with the result the coppice shoots after main felling were allowed to grow, led to heavy competition of coppice shoots and consequently congestion in the crop was noticed. The working plan prescribed that the marking of the main felling coupes in Bhansara, Satara, Anjankhed and Kharbi should be done by the gazetted officer but this was never followed. The result was that the prescriptions have not been scrupulously followed.

(2) PLANTATION WC

Old Teak plantations in Tiwsala and Kinwat series and other suitable areas for raising teak, fuel and fodder plantations were included in this WC. The main aim was to plant under stocked and mixed forest area situated in compact blocks of more than 100 acres and capable of growing quality III to IVa teak, by agri-silvi plantations and also growing better plantations of fuel and fodder as per the suitability of site.

RESULTS:

The prescriptions in teak and mixed plantations raised during the period of the plan has shown wide variations in success. The factors, which were responsible for this are soil conditions and lack of tending of crop after plantation. Only 135.415 ha. of plantations have been taken up out of proposed 530.500 ha area of plantation.

(3) PAINGANGA SELECTION-CUM-IMPROVEMENT WC

In this WC the best quality of teak forests along the bank of Penganga river were included. Only one felling series with 2 cutting sections A and B were constituted. The crop included in this WC was of site quality III. Results of stock mapping indicate that most of the teak forests are capable of growing sound teak trees upto 5' girth. The principal associates of Teak are Ain, Dhawada, Kalam, Bel, Semal etc. Cutting section A was divided into 20 coupes on 20 year felling cycle. The exploitation girth of teak was 135 cm at breast height over bark and the yield was regulated by area. The forests included in cutting section B were completely young crop and divided into 10 coupes and thinning on a 10 year cycle was prescribed; 16.187 ha. of teak plantation mixed with Semal and Shivan was prescribed on agro-silvi basis starting from coupe no.I of the cutting section B every year. Mechanical thinning was prescribed in 5th & 10th year respectively and subsequently light crown thinning was also prescribed on a 10 year cycle. In cutting section A regular thinning and tending operations were prescribed on the basis of 10 year cycle.

RESULTS:

It was prescribed to remove 140 teak trees of above exploitable girth per year but improper execution resulted in over exploitation. In the name of improvement, marking the pre selection girth class trees were also marked for felling, which led to the over exploitation. Teak plantations of 16.187 ha in each coupe were not taken up, which indicates the prescriptions were not followed. It was also observed that timely thinning was not carried out resulting in the congestion of plantations.

(4) IMPROVEMENT WC

In this WC crooked, stunted, malformed and open teak forests situated in remote area were included. Low density, poor quality forests devoid of regeneration due to heavy growth of thick grass especially in Kharbi & Jaorala plateaus with scattered patches of better density crop along main nala was included in this WC. The forests included in this area were largely uneven aged, unsound and malformed stems with high percentage of teak. The felling cycle was fixed at 20 years.

RESULTS:

It was observed that the prescriptions were not rigidly followed as a result of which over exploitation took place in the crop. Moreover, the size of annual coupe was approximately 400 ha which was very large to control and supervise by the staff.

(5) BAMBOO (OVERLAPPING) WC

All important bamboo areas were included in this WC. The areas was divided into 11 felling series worked under 3 years cutting cycle. Bamboo covered only a small area and it is of poor quality but of great local importance.

RESULTS:

The prescriptions were not followed which resulted in malformed and congested crop. Out of prescribed area 118.210 ha. of bamboo plantations on 122.33 ha. have been taken up. It was observed almost all bamboo plantations were practically failures.

(6) PASTURE IMPROVEMENT WORKING CIRCLE

In this WC open or scrub forests classified as pasture land have been included. The main object of this WC was to provide grazing to the maximum possible extent in consistence with the preservation and improvement of the pasture. Each pasture series was divided into 4 or multiple of 4 coupes and 1 out of every 4 coupes was to undergo 3 years monsoon closure continuously and then remain open to continuous grazing for 9 years. Operations aiming at improvement of pasture were to be carried out one year before closure. In these areas planting of better fodder species like Sheda, Paunya and Marvel was prescribed. Similarly planting of fodder trees were also prescribed like Anjan, Kachnar, Bija etc. in these coupes one year before closure.

RESULTS:

Effective implementation of the prescriptions made in the WC could not be achieved as the area was surrounded by cultivations and villages, closure was a difficult task. The area was subjected to indiscriminate grazing. Teak plantations raised in Deulgaon and Rui pasture series have miserably failed as the prescriptions of raising teak plantations in pasture series as prescribed was not correct.

(7) MISCELLANEOUS WC

All the grass birs, forest villages and few compartments which were not been included in any WC circle, were allotted to this WC.

(A) GRASS BIRS:

There were 13 grass bir ramnas in the division and some of the grass birs have been fenced. Prescription for the improvement of grass birs had been followed to some extent in Gahuli ramna. In grass birs located in Darwha Range, there was no sufficient demand for grass.

(B) FOREST VILLAGES

25 forest villages were there in the division. They were managed as per the instructions contained in Para No.68 & 69 of the C.P. & Berar Manual vide Govt. notification no.FLD-3269-221239-WI, dt.20.12.69. These forests were deforested and later transferred to Revenue Dept. as per Maharashtra Land Revenue Code 1966.

11.2.6 PAL'S WORKING PLAN (1976-77 TO 1991-92)

Thosre's WP was revised by Shri B.C.Pal. As per the prescriptions of Pal's WP, the forest area was divided into 8 WC including 2 overlapping WC. A brief account of WC and assessment of working is given below.

(1) SELECTION-CUM-IMPROVEMENT (SCI) WC

Best quality of teak forests of site quality III along the banks of river Painganga, managed under Painganga Selection-cum-Improvement WC during the previous plan were included in this WC. These forests were also managed under Painganga High Forest WC prior to Thosre's plan. The crop was uneven aged with inadequate regeneration. The principal species was teak of site quality III and the area was mostly inaccessible & undulating. The selection girth was fixed at 130 cm at bh over bark and felling cycle was fixed at 20 years. 2 felling series namely Painganga-I and Painganga-II were formed. The yield was to be regulated by area. $\frac{1}{3}^{\text{rd}}$ of the total teak trees above selection girth were to be marked for felling and all miscellaneous trees above 135 cm girth except certain reserved species were to be marked for felling. In the remaining crop light thinning was prescribed to remove congestion. Diffused plantations were prescribed in patches not less than 0.5 ha as per the suitability of site. Cut back operations in the next year of the main felling and cleaning in the 6th year were prescribed. Mechanical thinning was to be carried out in the teak plantations.

RESULTS:

The condition of crop remained more or less the same. The density of the crop varies from 0.5 to 0.8 and teak constitutes main species of the crop. The crop is

middle aged to mature and the regeneration of teak and other species is inadequate. Presently the area falls in Painganga Wildlife Sanctuary.

(2) TEAK PLANTATION WC

The old Teak plantations taken up in the past and the area suitable for growing plantations of teak and other miscellaneous species were included in this WC. The basic object was to convert the existing inferior quality and less valuable mixed species forests into valuable and superior teak forests. The treatment was clear felling followed by artificial regeneration. The site quality of the forests was III and IV. The area included in this WC for rising new plantations, has been divided into 2 felling series with 40 annual coupes whereas the area under old plantations was divided into 10 annual coupes. Thinning was prescribed in 8th, 15th, 25th, 35th and 45th year of the plantation. First 2 thinnings were mechanical, whereas the thinning at 25th, 35th and 45th year of planting was silvicultural thinning.

RESULTS:

The prescriptions regarding thinning in old teak plantations were satisfactory which were implemented during this plan. The new plantations could not be raised with desired success as most of the new sites proposed for plantations were in ripping zones or in valley depression. Proper rab burning and stump uprooting had not been carried out at the time of planting, resulting in the formation of multiple coppice shoots and the teak seedlings planted did not achieve desirable growth. Adequate no. of miscellaneous species was not maintained.

(3) COPPICE WITH RESERVES (CWR) WC

Major forest area of the region included in this WC was capable of producing small to medium size timber, poles and firewood, the site quality IVa & IVb, mostly teak as principal species, crop young to middle aged. The area was divided into 25 felling series with 40 annual coupes of each felling series. The rotation for teak was fixed at 40 years and corresponding girth expected by this time was 85 cm. Reservation of 150 trees/ha for site protection besides all sound, fruit bearing trees

along with well grown advance growth of teak and other species upto 40 cm in girth was to be retained. Clear felling to the tune of 10% of the coupe area or a minimum of 5 ha in well stocked area for raising teak plantation was prescribed. Blank area, nala banks, eroded and steep slope area was excluded from the felling. The yield was regulated by the area. Under this system, regeneration of mainly of coppice origin, cutback operations after main felling, cleaning in 6th year of main felling were prescribed. As per the WP prescriptions, 1st and 2nd mechanical thinnings were to be carried out at 8th & 15th year respectively. Thereafter silvicultural thinning (3rd and 4th thinning) was to be carried out at 25th and 35th year.

RESULTS:

Since most of the area had been repeatedly managed under CWR system right from the beginning of 1938-39 as per the Robinson's WP, it resulted in reduction in coppice vigour of teak and its associates. The stocking of teak had increased over the years owing to poor coppicing of miscellaneous species. Soil had become highly compact due to adverse biotic factors, heavy grazing, illicit felling, frequent fires of adversely affecting natural regeneration of teak and its associates. The reduction of coppice shoots to 1 to 2 per stool as prescribed in WP had not been followed scrupulously. The resultant coppice crop was stunted, malformed and pollarded to a great extent, constituting high proportion of teak.

(4) FODDER RESERVE WC

It included the area adjacent to cultivations, capable of producing good fodder grass, locally called as Ramnas. These areas were managed under the same system of the previous working plan. These areas were situated in close proximity of towns and villages having demand for fodder grass. The basic object is to improve quality and quantity of fodder grasses, introducing better variety of grass species to improve yield. The areas of this WC were mostly devoid of tree growth. The common grass of this area were Kusal, Aristidia, Funuculenta and grasses like shedra, paunya are scarcely present. The area has to be protected from grazing and fires. All the Ramnas were to be fenced with wire fence or cattle proof trenches. They

were to be permanently closed to grazing and grass was to be sold only on cutting basis after October 31st. All the areas were to be fire traced annually.

RESULTS:

Most of the Ramnas were worked and maintained as per the working plan prescriptions. The areas could not be closed effectively to the cattle grazing since these were not wire fenced. The situation has resulted in further deterioration of the soil. The local people did not respond properly towards the system of cutting and purchasing fodder to stall feed their cattle, mainly due to availability of grass in forests adjoining the villages. Few Ramnas were wire fenced and properly maintained like Belgaon Ramna near Singad has luxuriant growth of fodder grasses. In most of the Ramnas plantations under different schemes have been taken up but most of these plantations were not successful.

(5) PASTURE IMPROVEMENT WC

Pasture lands as per the classification made on functional basis were included in this working circle. These forests were basically open or scrub lands, do not yield even small timber but are conveniently situated for providing grazing lands to the cattle of adjoining villages. Most of the area managed under Pasture Improvement WC of Thosre's WP was included in this area. Special objects of the management of the WC were - (1) To check soil erosion, (2) To maintain and improve the existing vegetation, (3) Providing grazing land. Scattered trees of Salai, Palas, Dhawada, Hiwar, Ain, Lendia and usually thorny species like Khair, Acacia, Ber, Chilati, Bharati, grasses of Bhurbhushi, Kusal, Sheda etc occur in this area. Control of grazing, improvement of pastures by closing certain area for grazing and allowing other areas open for grazing were prescribed. Cattle unit prescribed was 0.40 ha. The total area was divided into 15 pasture series with 4 or multiples of 4 annual coupes in each series. One out of 4 coupes was to be closed for grazing for 3 years continuously and thereafter the coupe was to remain open for 9 years. No grass cutting was allowed in closed coupes and the area was to be protected from fire, introduction of superior fodder grass and tree species, contour trenches etc were also prescribed.

RESULTS:

The working plan prescriptions were not followed. The practice of rotational grazing as prescribed was not implemented. Heavy grazing without any improvement works coupled with the heavy biotic pressure had resulted in further deterioration of the pasture areas.

(6) BAMBOO (OVERLAPPING) WC

It includes forests area having bamboo established in Kharbi, Bittergaon and Arni Ranges. It overlaps Selection-cum-Improvement (SCI) WC, Coppice with Reserves WC and Teak Plantation WC. *Dendrocalamus strictus* is the species in this area. Method of treatment prescribed was 3 year cutting cycle i.e. A, B and C. Three cutting series were formed with each series divided into 3 annual coupes. Bamboo plantations were prescribed in suitable area along nala banks.

RESULTS:

Bamboo plantations undertaken in the past did not succeed. They were affected by wild pig at many places and no bamboo was harvested. Stocking of natural bamboo in forests is negligible.

(7) MISCELLANEOUS WC

Poor and understocked forests out of the Coppice With Reserves WC and area of Improvement WC which did not show any sign of improvement of Thosre's WP and the area handed over to other departments but the Government did not issue any notification were included in this WC. In general the areas were open with teak and its common associates such as ain, dhawada, lendia, tendu, salai, beheda. Treatment prescribed was to give complete rest to the forests for natural regeneration.

RESULTS:

Heavy grazing resulted in compaction of soil with no sub-soil moisture and natural regeneration could not be established. Improvement of the area was not

possible without soil and moisture conservation methods. The area deteriorated further due to heavy biotic pressure and frequent fires.

(8) WILDLIFE (OVERLAPPING) WC

It covers entire forest division. The special objects of the management were to ensure and maintain viable population of wildlife, to preserve area of natural heritage for the benefit of wild life. Prescriptions emphasized digging of water holes, no felling in a radius of 100 meters from perennial water holes, construction of nala bunds, of salt licks at suitable places and continuous patrolling, erecting watchtowers etc.

RESULTS:

All the prescriptions were hardly followed therefore no significant improvement in the wildlife management was noticed.

11.2.7 WP FOR EAST YAVATMAL DIVISION BY SHRI V.R. KANEKAR (1982-83 TO 1997-98)

For East Yavatmal Division Shri. V.R. Kanekar wrote the Working Plan, which was under implementation from 1982-83 to 1997-98. In Yavatmal Forest Division, eastern part of the forests was carved out from East Yavatmal Division and Western part was carved from West Yavatmal Division and by amalgamating these two parts, Yavatmal Forest Division had been created in 1983 vide Government Resolution No. FDM/1Bb-F-2/ dated August 29, 1983. Shri V.R. Kanekar revised WP of Shri Thosre, which was meant for entire old Yavatmal Forest Division pertaining to East Yavatmal after bifurcation of old Yavatmal Forest Division into East Yavatmal and West Yavatmal Forest Divisions. The brief narration of prescriptions and their impact is discussed below.

1) COPPICE WITH RESERVES WC

The forests capable of producing small timber, poles and firewood, site quality IVb, IVa were included in this WC. Most of these areas were managed under

CWR system in the previous plans i.e. Malcom's Plan and Thosre's Plan. The crop is young to middle aged with Teak as the principal species and forms more than 50% of the crop canopy with its natural associates like ain, dhawada, lendia, khair, tendu etc. The area was divided into 42 Felling Series with a felling cycle of 40 years forming 40 annual coupes in each felling series. The rotation period was fixed at 40 years by that time teak would attain girth of 76 cm at breast height. In this system 150 trees per hectare were reserved for site protection and also as seed bearers including semal and salai trees above 100 cm girth. Further clear felling of 10 % of area with minimum of 5 ha in well stocked areas followed by AR, diffused plantation of suitable species in under stocked area were prescribed. The girth limit of reserved trees was between 25 cm and 45 cm for Teak species. While reserving trees of edible fruits and flower bearing trees of moha, char, awala, tendu and rare local species like bija, sisham, haldu, shivan and kulu were to be considered for reservation upto 60 cm girth. CBO after one year of felling and cleaning in 5th year after main felling were prescribed and thinning was prescribed into 20th year of the main felling for the general crop.

RESULTS:

The areas were repeatedly managed under CWR System since the time of Robinson's WP (1938-39), it has resulted in reduced coppice vigour of teak and its associates. The proportion of teak has increased when compared to miscellaneous species since teak is a good coppicer. Apart from this the soil had become compact due to adverse biotic factors like illicit cutting, heavy grazing and frequent fires, adversely affecting regeneration of both teak and its associates. The prescriptions of stool dressing and reduction of coppice shoots to 1 or 2 per stool had not been scrupulously followed resulting in a number of shoots getting established from the same stool. There was no prescription for reservation of the advance growth; more over due to reservation of teak trees falling between 25 cm and 45 cm girth class the crop remained devoid of good seed reserves thereby affecting natural regeneration. The higher girth class (above 60 cm girth at breast height) was found to be selectively marked at many places even in the well stocked areas and the

marking was found to be conservative without any valid reason and coincide with the CWR System. It was observed in many areas that Coppice Selection System was followed rather than CWR system in which felling was carried out as in Selection System but the regeneration is obtained by coppice. At many places, it was observed that out of 2 or 3 poles or trees arising from the same stool only one was felled while retaining the others. Later multiple shoots arose from the freshly cut stools thereby resulting in multiple shoots, poles and trees arising from the same old stool due to bad coppicing practice. It was also noticed that CBO, cleaning and thinning prescriptions were not followed.

2) TIWSALA PLANTATION WC

Tiwsala Plantations of Thosre's Plan raised since 1930's were included in this WC, with an object to meet the demand for medium sized Teak timber and to use the area to its fullest productive capacity. The silvicultural system followed was "clear felling and planting by agri-silvi method" with a rotation of 60 years. Only one felling series was formed with 20 coupes. In the plantation 1st and 2nd mechanical thinning were prescribed at 8th and 12th years respectively.

RESULTS :

The area was not attended and results are not known. The area presently is with over matured Teak trees at places with crop density around 0.7 to 0.8. The crop requires silvicultural operations to improve its growth and hygiene. As such the total area now is in Pandharkawada Forest Division.

3) PASTURE WC

Majority of the areas included in this WC were blank and under stocked containing stunted trees of salai, palas, dhawada, hiwar, khair, ber etc. The cattle unit prescribed was 0.4 ha. The area was formed into 25 Pastures Series with each series divided into 4 or multiple of 4 annual coupes. One out of every 4 coupes was to be closed to grazing for 3 years from continuously and thereafter the coupe was to remain open for nine years. No grass cutting was allowed in closed coupes which

were to be fire protected. Introduction of superior fodder grass and fodder tree species during the closure period were prescribed.

RESULTS :

The Working Plan prescriptions were not followed. The practice of rotational grazing as prescribed could not be implemented successfully. Heavy grazing without any improvement works resulted in further deterioration of pasture areas.

4) KURAN WC

Most of the areas managed under the same system or Pasture WC in the previous plans were included in this WC. The area was mostly without tree growth and grass present in these areas have less fodder value. Barbed wire fencing was prescribed for all areas and an area of 25 ha per year per Kuran was to be taken up for reboisement with better fodder grass. These areas were to be permanently closed to grazing and the grass was to be sold only on cutting basis after October 31. Prescriptions were made for eradication of unpalatable grass.

RESULTS:

Most of the Kurans were not attended and maintained as per the prescriptions. The area could not be closed to the cattle since majority of them were not wire fenced, which led to the further deterioration of the sites. People's response was poor for cutting and purchasing fodder to stall feed their cattle, due to the availability of grass in the adjoining forests. However few Kurans were wire fenced and properly maintained, had luxuriant growth of fodder grasses. In many Kurans, plantation of different schemes have been raised, most of the plantations did not succeed.

5) AFFORESTATION WC

In this WC, area having little or no tree growth was included. In zone- I soil and moisture conservation works were prescribed, whereas zone- II area as to be treated with V- shaped furrows and grass seed beds. In zone – III area tree plantation

was to be carried out either in trench pits alone or in the combination of uralis and trench pit. Closure to grazing for 5 to 10 years was prescribed.

RESULTS:

The area included in this WC was tackled under Massive Afforestation Programme since 1988 including other area. Teak and miscellaneous species plantations raised in these areas have not given encouraging results.

6) BAMBOO (OVERLAPPING) WC

The entire areas divided into 11 cutting series with a cutting cycle of 3 years and each felling series was divided into 3 annual coupes. Prescriptions were made in the plan for raising bamboo plantations in suitable areas.

RESULTS :

Bamboo plantations raised under various schemes were not successful. They were affected by wild pig and the stocking of natural bamboo in the forest was also negligible.

7) WILDLIFE (OVERLAPPING) WC

The entire forest area of Yavatmal Division was included in this WC. The prescriptions include digging of water holes, no felling in radius of 100 meters from the natural shelter of the wildlife, construction of nala bunds, providing salt-licks and planting fruit species and other habitat improvement measures.

RESULT : All these prescriptions were hardly followed.

11.2.8 SHRI.R.S.YADAV'S WORKING PLAN (2001-2002 TO 2010-2011)

The following working circles were proposed:

1. SURVEY AND DEMARCATION WORKING CIRCLE (OVERLAPPING)

This working circle was formed for effective boundary demarcation of the forests. A total of 35,148 ha area with an effective boundary length of 1761.73 km

was to be surveyed and mapped within a span of five years. It was prescribed to obtain village maps and land records which were to be compared with the maps and records available in the Forest Department and discrepancies were to be corrected. RCC pillars were to be established along the boundary.

RESULTS:

Working plan implementation commenced during 2002-03 and during this period only demarcation and marking of coupes was carried out in the forests. A total of 17,500 pillars were erected from 2002-03 to 2007-08. And only 901.079 km length out of the prescribed 1761.73 km was demarcated. Hence, survey and demarcation works were partially completed.

2. SELECTION CUM IMPROVEMENT WORKING CIRCLE

The area included in this WC was previously managed under the Coppice With Reserves system. It resulted in poor teak forests. The basic aim was to replace the stunted coppice growth with high forests by encouraging seedling regeneration. The selection girth was fixed at 75 cm girth at breast height for site quality IVB and 105 cm girth at breast height for site quality III and IVA. The felling cycle was fixed at 10 years. Total area allotted to this working circle is 32,787.18 ha; the area was divided into 22 felling series and 10 coupes in each felling series. The average area of each coupe is 149 ha. The trees above selection girth were to be enumerated and 50% of total teak trees enumerated above harvestable girth were to be marked for felling. In the blank areas planting of 50% teak and 50% miscellaneous species was prescribed. Tending of seedling regeneration, soil and moisture conservation measures like nala bunding, gully plugging, contour trenches, check dams etc were prescribed. It has to be supplemented by artificial regeneration with suitable species.

RESULT:

Coupe number I of all felling series was not tackled as per WP, causing deviation. Out of the coupes due for working every year more than 90% coupes have

been worked as far as felling operation is concerned. The harvestable girth is 75 cm for site quality IVb and 105 cm for in site quality IVa and III. But the harvestable girth of 75 cm was uniformly applied to all site qualities without considering the harvestable girth of 105cm for site quality IVa and III, this resulted in excess removal of timber. Cleaning operations were not carried out whereas CBO operations were carried out partially, which clearly indicates that the prescriptions have been implemented partially in case of CBO operations, whereas no cleaning operations were carried out.

The prescriptions regarding soil and moisture conservation works have been partially implemented upto 2004- 05 and no soil and moisture works were carried out since 2005-06. Under artificial regeneration 30 ha plantation was carried out in 2003-04, 40 ha in 2005-06, 100 ha in 2007-08 and 145 ha in 2008-09. In the year 2004-05 and 2006-07 no plantations were taken up.

3. IMPROVEMENT WORKING CIRCLE

The area previously managed under Coppice with Reserves WC, Miscellaneous WC of previous plan was included in this WC. The total area allotted to this WC was 21519.71 hectare, site quality IVA & IVB, with scattered patches of site quality III and density varies between 0.4 to 0.6. The crop is young to middle aged. The primary objects of management were to improve the crop, conserve soil and moisture and to improve the forest crop. The 88 compartments have been included in this WC and divided into 22 working series, having 10 coupes in each working series. The average area of each coupe comes around 100 ha. The treatment prescribed was improvement felling of malformed trees and thinning. No yield regulation was prescribed. Soil and moisture conservation measures like gully plugging, nala bunding and WAT were prescribed and greater emphasis was given to soil and moisture conservation works. Tending of natural regeneration, supplemented with artificial regeneration was prescribed. In the plantations 50% teak and 50% of miscellaneous species were prescribed. In subsidiary silvicultural operations CBO, cleaning operations were prescribed.

RESULT:

In some of the coupes marking operations were carried out on the basis of harvestable girth of 75 cm which is serious deviation from the prescriptions. Prescriptions were made to carry out improvement felling through department, but some of the coupes were allotted to FLCS after marking and estimation of yield, which is deviation from the WP prescriptions. Some of the coupes of this WC were treated on the lines of Selection-Cum-Improvement WC, deviating the prescriptions. Prescriptions regarding soil and water conservation works, natural regeneration, artificial regeneration and subsidiary silvicultural operations were partially followed.

4. AFFORESTATION WORKING CIRCLE

Under stocked and open forest area having site quality IVB have been included in this WC some area under this WC was previously managed under Coppice with Reserves WC, Miscellaneous WC. The principal species is Teak with its natural associates like ain, dhawada, char, tendu etc. These areas were subjected to heavy grazing which resulted in compaction of soil. Total area included in this WC was 19,236.53 ha. The special objects were to check soil erosion by adopting suitable soil and moisture conservation measures, to improve vegetal cover, to control biotic interference and to increase the productivity of forests. The status of natural regeneration of teak and its associates was poor.

RESULT:

In this working circle 945 ha in 2006-07, 800 ha in 2007-08, 1497 ha in 2008-09 have been taken up for afforestation works. Seed sowing /bush sowing was carried out in 1100 ha in 2007-08. No soil and moisture conservation works were carried out in this area during the plan period .

5. FODDER WORKING CIRCLE

The area included in this WC was previously managed under Fodder Reserve WC and Pasture WC. The site quality of the area is IVb, mostly open or sparsely wooded. In most of the Ramnas grass of less fodder value like Kushal (*Andropogan*

contortus) and Bhurbhshi (*Eragristus tennela*) are available and good fodder grass like Sheda, Paunya, Marvel etc. sparsely occurring. Total area included in this working circle was 6,248.55 ha. Out of total 31 compartments 10 compartments are kept as Ramnas 1,475.10 ha and 21 compartments having area (4773.45 ha.) were kept for rotational grazing. Compartments allotted for rotational grazing were divided into 4 sections and each section should be under treatment, closed for grazing for 3 consecutive years; from 4th year onwards controlled grazing was to be permitted during October to May. Intensive soil and moisture conservation works, removal of weeds, thorny shrubs, bushes, eradication of unpalatable grass like kusal, bhurbhushi etc., sowing seed of superior fodder grass shedha, paunya, marvel on lower side of the contour trenches etc. were prescribed. Treatment like intensive fire protection, closing of area permanently to grazing in Ramnas was also prescribed.

RESULTS :

The working plan prescriptions were not followed. The practice of rotational grazing was not implemented, therefore heavy grazing without any improvement works resulted in further deterioration of this area. There are no old fenced areas under this WC. Most of the Ramnas were not maintained as per the prescriptions. The Ramnas could not be closed effectively from the entry of cattle since the majority of the Ramnas were not wire fenced, nor there was cattle proof trench. Moreover the response of people was very poor towards cutting and purchasing of fodder to stall feed their cattle, due to the availability of adjoining forests for grazing. Many plantations taken up under various schemes did not succeed. It is evident that the fodder improvement area had been neglected.

6. JOINT FOREST MANAGEMENT (OVERLAPPING) WORKING CIRCLE

Area included in this WC is 40,748.29 ha in 291 compartments. The main objects were to seek people's participation especially the members of JFM committees in protection of forests, to increase vegetal cover and to check soil

erosion. The areas were to be treated as per microplan to be prepared in consultation with villagers as per the instructions of the Government.

RESULTS :

While implementing JFM, DCF Yavatmal formed and registered 270 JFM committees as against 121 villages projected in the working plan. Out of 270 villages 68 micro plans were prepared.

7. MISCELLANEOUS WORKING CIRCLE

9,663.64 ha area was included in this WC. Some of the areas have already been transferred to other departments prior to 1980, but these areas have not been disforested by issuing notification. Other areas like nursery, forest quarters etc are also included. This forest land is not managed under any silvicultural system.

11.2.9 RAO'S WORKING PLAN (2012-2013 TO 2021-2022)

Yadav's Working Plan was replaced by Shri G.Rama Krishna Rao's . It essentially continued the major working circles of the previous plan, apart from adding three overlapping working circles related to wildlife management, NTFP and forest protection.

TABLE NO. 11.1: AREA ALLOCATION TO DIFFERENT WORKING CIRCLES UNDER RAO'S WORKING PLAN

Sr. No.	Working Circle	Compt. No.	Area Allotted in (ha)	Percentage Area Allotted	No. of Felling Series
(1)	(2)	(3)	(4)	(5)	(6)
1	Selection cum Improvement WC	69	44825	53 %	28
2	Improvement WC	188	10103	12 %	6
3	Afforestation WC	36	22326	26 %	14
4	Fodder Improvement WC	63	7350	9 %	5
	Total :	449	84604	100 %	54

BRIEF ANALYSIS OF EACH WORKING CIRCLE IS GIVEN BELOW

11.2.9.1 SELECTION-CUM-IMPROVEMENT WORKING CIRCLE

The area included in this WC was previously managed under the Coppice With Reserves system which has resulted in poor teak forests. The basic aim was to replace the stunted coppice growth with high forests by encouraging seedling regeneration. The other objectives included improving the forest density and composition by harvesting mature Teak trees, improvement filling, supplemented by natural and artificial regeneration, CBO and soil moisture conservation measures. The selection girth was fixed at 75 cm girth at breast height for coppice origin and 120 cm girth at breast height for seed origin. The entire is considered as site quality IV as site quality III patches are very less in extent. The felling cycle was fixed at 20 years.

This working circle includes 44825.32 ha. Area divided into 28 felling series with 20 coupes in each felling series. The average area of each coupe is 80 ha. The trees above selection girth were to be enumerated and 15 trees of coppice origin and 0.48 trees of seed origin per hectare are to be felled. In the blank areas planting of 50% teak and 50% miscellaneous species was prescribed. Tending of seedling regeneration, soil and moisture conservation measures such as nala bunding, gully plugging, contour trenches, check dams etc were prescribed.

RESULTS:

It is seen that the prescriptions were exhaustive and conservation oriented. Though there is less quantity of seed origin crop, the working plan differentiates between seed origin and coppice origin teak, prescribing different harvestable girth for seed origin and coppice origin teak trees. Of the 250 designated coupes during the plan period, felling operations were carried out in 186 coupes. The remaining 64 coupes weren't worked due to reasons such as high proportion of A type area, crop density being less than 0.4, high proportion of non-teak species, farmers taking

possession of the land through FRA claims, among others, resulting in less area available for coupe working. Coupe-wise details are given below:

TABLE NO. 11.2: COUPEWISE DETAILS OF WORKED AND UNWORKED COUPES OF SCI WORKING CIRCLE DURING RAO'S WORKING PLAN

Sr. No	Year	Coupe	Total		Worked		Unworked	
			Coupes	Area (Ha.)	Coupe	Area (Ha.)	Coupe	Area (Ha.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	2012-13	I	28	2255.35	13	1603.79	15	651.56
2	2013-14	II	28	1815.00	9	703.79	19	1105.21
3	2014-15	III	23	1815.00	21	1655.00	2	160.00
4	2015-16	IV	25	1965.00	24	1885.00	1	80.00
5	2016-17	V	25	1941.48	17	1653.75	8	287.73
6	2017-18	VI	26	2045.79	23	1790.79	3	255.00
7	2018-19	VII	23	1837.52	19	1597.52	5	320.00
8	2019-20	VIII	23	1724.80	20	1575.00	10	674.80
9	2020-21	IX	25	1988.87	19	1504.84	6	484.03
10	2021-22	X	24	1981.95	21	1667.50	3	314.45
	Total :		250	19370.76	186	15636.98	64	3733.78

With respect to yield realization, as per Rao's Plan, average annual yield is estimated to be 3.496 cum per hectare. Based on the total D area worked i.e. 9889.04 ha, the theoretical yield is estimated to be 34,572 cum. The estimated yield as per enumeration and marking exercise is 13879.15 cum and the total yield realized is 15440.44 cum. The coupe wise details are given below:

**TABLE NO. 11.3 : COUPEWISE HARVESTED YIELD UNDER SCI WORKING CIRCLE
DURING RAO'S WORKING PLAN**

Sr. No.	Year	Coupe No.	No. of Due Coupes	Area (ha.)	No. of Coupes Worked & Area (ha.) of Coupes			Estimated Yield for the Coupes Worked (m ³)	Actual Yield (m ³)
					No. of Coupes	Total area (Ha.)	Workable Area (D area)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	2012-13	I	28	2255.35	13	1603.79	1045.00	2036.58	2039.91
2	2013-14	II	28	1815.00	9	703.79	693.79	789.62	1030.37
3	2014-15	III	23	1815.00	21	1655.00	742.35	1207.73	1656.02
4	2015-16	IV	25	1965.00	24	1885.00	1015.51	1841.69	1897.70
5	2016-17	V	25	1941.48	17	1653.75	1292.79	2485.77	2453.11
6	2017-18	VI	26	2045.79	23	1790.79	1296.79	1985.18	2024.61
7	2018-19	VII	23	1837.52	19	1597.52	992.85	1183.72	1350.94
8	2019-20	VIII	23	1724.80	20	1575.00	923.36	830.60	1201.95
9	2020-21	IX	25	1988.87	19	1504.84	971.02	880.95	979.00
10	2021-22	X	24	1981.95	21	1667.50	915.58	637.31	806.83
	Total :		250	19370.76	186	15636.98	9889.04	13879.15	15440.44

Subsidiary Silvicultural Operations works were carried out in an inadequate manner. The quality of CBO works is subpar, mainly owing to lack of adequate funds and poor monitoring, resulting in poor regeneration.

11.2.9.2 IMPROVEMENT WORKING CIRCLE

The area previously managed under Coppice with Reserves WC, Miscellaneous WC and Improvement Working Circle was included in this WC. The total area allotted to this WC was 10102.61 Ha with site quality IVA & IVB, and scattered patches of site quality III and density varies between 0.4 to 0.6. The crop is young to middle aged. The dominant species is Teak along with its associates Ain, Hirda, Dhawada, Tendu, Kalamb, Mowai etc. The primary objects of management were to improve the crop, to check the soil erosion, conserve soil and moisture and to improve the forest crop. 47 compartments have been included in this WC and

divided into 6 working series, having 20 coupes in each working series. The average area of each coupe is 84 ha. The treatment prescribed was improvement felling of malformed trees and thinning. For treating the coupes the areas were divided into type A- protection areas, type B- under stocked area, type C- pole crop and old plantation area and type D- well stocked area. No yield regulation was prescribed. Soil and moisture conservation measures like gully plugging, nala bunding, etc were prescribed. Tending of natural regeneration, supplemented with artificial regeneration was prescribed. In the plantations 50% teak and 50% of miscellaneous species were prescribed. In subsidiary silvicultural operations CBO and cleaning operations were prescribed.

RESULT:

Out of 60 designated coupes during the plan period, improvement fellings were carried out in 33 coupes, which is about 55%. Reasons for not working the coupes were high proportion A type area, crop density being less than 0.4, farmers taking possession of the land through FRA claims resulting in less area available for coupe working, among others. Apart from these, poor decision making, lack of motivation to work the coupe and poor monitoring have resulted in such a low level of working of coupes. The details of yearwise coupes worked and yield realized are given below:

**TABLE NO. 11.4 : YEARWISE COUPES WORKED AND YIELD REALIZED UNDER IWC
DURING RAO'S WORKING PLAN**

Sr. No.	Year	Coupe No.	Number of Due Coupes	Area (Ha.)	No. of Coupes Worked & Area (ha.) of Coupe			Estimated Yield for the Coupes Worked (m ³)	Actual Yield (m ³)
					No. of Coupes	Total Area	Workable Area (D Area)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	2012-13	I	6	520.37	1	80.00	79.78	143.05	76.60
2	2013-14	II	6	489.76	2	155.00	110.00	57.63	101.95
3	2014-15	III	6	530.35	5	450.35	398.32	252.84	333.61

Sr. No.	Year	Coupe No.	Number of Due Coupes	Area (Ha.)	No. of Coupes Worked & Area (ha.) of Coupe			Estimated Yield for the Coupes Worked (m ³)	Actual Yield (m ³)
					No. of Coupes	Total Area	Workable Area (D Area)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
4	2015-16	IV	6	520.37	4	360.37	342.82	128.75	172.21
5	2016-17	V	6	505.65	4	345.65	337.76	299.43	134.83
6	2017-18	VI	6	472.79	2	160.00	145.04	96.89	166.74
7	2018-19	VII	6	492.00	3	235.00	178.50	158.09	146.82
8	2019-20	VIII	6	491.26	3	246.40	101.60	113.25	202.20
9	2020-21	IX	6	473.71	6	473.71	321.99	92.99	80.73
10	2021-22	X	6	482.68	3	212.68	94.00	56.09	84.50
	Total :		60	4022.55	33	2719.16	2109.81	1399.01	1500.19

As per the plan prescription, the IWC coupes are to be worked only through the department since the prescriptions are for improvement felling and a very small quantity of yield would be realized. However, this prescription is not followed as out of 33 coupes, 22 coupes have been worked through FLCS. The prescriptions regarding artificial regeneration, subsidiary silvicultural operations, soil and moisture conservation works and other regulations like fire protection and grazing control have been partially implemented.

11.2.9.3 AFFORESTATION WORKING CIRCLE

Under stocked and open forest area having site quality IVb have been included in this Working Circle. Area under this WC was previously managed under Coppice with Reserves WC, Miscellaneous WC, etc. Total area included in this WC was 22326.05 Ha. And the area was divided into 14 Working Series and each series was divided into 20 coupes. The principal species is Teak with its natural associates such as Ain, Dhawada, Char, Tendu etc. These areas were subjected to heavy grazing which resulted in compaction of soil. The status of natural regeneration of teak and its associates was poor. The special objects were to check soil erosion by adopting

suitable soil and moisture conservation measures, to improve vegetation cover, to control biotic interference and to increase the productivity of forests. Plantations have to be carried out in 2 phases.

PHASE-I RESTORATIVE PHASE

Restorative phase having duration for 3 years, in which TCM or live hedge fencing, soil and moisture conservation measures were prescribed. Singling and cut back of root stock and involvement of JFM Committee members were also prescribed.

PHASE-II PRODUCTIVE PHASE

This phase commences in 4th year in which PPO, FYO, were prescribed. No yield was prescribed to this WC. For treatment, coupes were to be divided into 4 categories viz. A- Protection area, B- under stocked area, C- pole crop and old plantation area and D- well stocked area. No marking was prescribed except for removal of dead trees. Plantations were prescribed in B- type area. Improvement of natural regeneration was prescribed by taking up tending operations, in all areas.

RESULTS:

Teak, Khair, Bamboo, Neem, Sitafal, Awala, Beheda, Karanj and other native species were planted in these plantations. The details of year wise plantations and number of saplings planted are given in the table below:

**TABLE NO. 11.5: YEARWISE AREA OF PLANTATIONS AND NO. OF SAPLINGS
PLANTED DURING RAO'S WORKING PLAN**

Sr. No.	Year	Area (ha)	No. of Plants
(1)	(2)	(3)	(4)
1	2013	836.36	741559
2	2014	531.00	689545
3	2015	921.81	844037
4	2016	833.00	876760

Sr. No.	Year	Area (ha)	No. of Plants
(1)	(2)	(3)	(4)
5	2017	459.37	460105
6	2018	1062.92	1121507
7	2019	992.00	944510
8	2020	13.46	15000
9	2021	223.80	281340
10	2022	340.00	305851
	Total :	6213.72	62,80,214

Most of the plantations undertaken during this plan period were fenced using either chainlink fencing or barbed wire fencing. Though it has escalated the costs of plantations, these fencings have been effective in preventing the straying of cattle and wild animals, ensuring survival and establishment of saplings.

Another observation is that in areas of low rainfall and poor soil quality sites such as in Ner and Darwha, the plantations that have been taken up have resulted in stunted growth and poor development. Such areas are better suited for FIWC.

Overall, the impetus of 50 crore plantation drive by Maharashtra Government and steady flow of funds for plantation activities over the years ensured fair implementation of plan prescriptions.

11.2.9.4 FODDER IMPROVEMENT WORKING CIRCLE

The area included in this WC was previously managed under Fodder Reserve WC and Pasture WC. The site quality of the area is IVb, mostly open or sparsely wooded. In most of the Ramnas grass of less fodder value like Kushal (*Andropogan contortus*) and Bhurbhshi (*Eragristus tennela*) are available and good fodder grass such as Sheda, Paunya, Marvel etc. sparsely occur. Total area included in this working circle was 7350.24 ha. Out of total 39 compartments allotted, 10 compartments are kept as Ramnas (1,475.10 ha) and 21 compartments having area (7350.24 ha.) were kept for rotational grazing. Compartments allotted for rotational

grazing were divided into 4 sections and each section should be under treatment, closed for grazing for 3 consecutive years; from 4th year onwards controlled grazing was to be permitted during October to May. Intensive soil and moisture conservation works, removal of weeds, thorny shrubs, bushes, eradication of unpalatable grass like Kusal, Bhurbhushi etc., sowing seed of superior fodder grass Sheda, Paunya, Marvel etc. were prescribed. Other treatments such as intensive fire protection and closing of area permanently to grazing in Ramnas was also prescribed.

RESULTS:

Fodder grass plantations to the tune of 558 ha were taken up under CAMPA during the last two years of plan period. Range wise details are given below:

**TABLE NO. 11.6: FODDER GRASS PLANTATIONS UNDER FIWC DURING RAO'S
WORKING PLAN (YEAR 2020-21 TO 2021-22)**

Sr. No.	Year	Range	Round	Beat	Compt. No.	Area (Ha)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	2020- 2021	Ner	Ner	Shabaspur	381	29
2			Mozar	Ajanti	384	20
3			Ner	Raipur	382	20
4			Ner	Kolura	383	20
5			Mozar	Mozar	198	20
6		Jodmoha	Kalamb	Kalamb	353	10
7			Jodmoha	Sonkhas heti	325	10
8			Jodmoha	Sonkhas heti	326	10
9			Jodmoha	Vithalwadi	327	20
10		Darwha	Darwha	Ghatkinhi	65	20
11			Darwha	S. Darwha	70	20
12			Darwha	Ghatkinhi	64	10
13			Darwha	Khopadi	67	10

Sr. No.	Year	Range	Round	Beat	Compt. No.	Area (Ha)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
14			Pathrad	Ladkhed	71	10
15			Karajgaon	Dhamangaon	62	20
16			Lohi	Lohi	187	10
17			Lohi	Lohi	448	20
18		North Arni	Borgaon	Borgaon	263	10
19			Borgaon	Tendoli	266	10
20			Borgaon	Borgaon	263	10
Total Area						309

Sr. No.	Year	Range	Round	Beat	Compt. No.	Area (Ha)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	2021-22	Ner	Ner	Raipur	383	20
2			Ner	Kolura	382	20
3			Mozar	Mozar	198	20
4		Darwha	Darwha	Mahurli	64	10
5			Darwha	Khopadi	67	10
6			Karajgaon	Dhamangaon	62	19
7			Pathrod	Ladkhed	71	20
8			Lohi	Hatola	448	20
9		Jodmoha	Kalamb	Belona	353	10
10			Kalamb	Chaparda	354	20
11			Jodmoha	Vitthalwadi	327	30
12			Jodmoha	Sonkhas	326	20
13		Yavatmal	Waghapur	Jambhulani	415	10
14		North Arni	Borgaon	Tendoli	266	20
Total Area						249

These plantations have come up well owing to good quality tussocks raised in the nurseries specially established for this purpose, chainlink fencing of plantations and effective fire prevention. Owing to these plantations, the proportion of quality fodder material has increased in these areas.

In order to maintain grassland ecosystems, it was envisaged that plantation of tree species shall be avoided. However, due to massive afforestation programmes such as 50 Crore plantation scheme, tree species plantation has been taken up in these areas. Prescriptions regarding soil and water conservation, fire prevention and grazing prevention have been partially implemented.

11.2.9.5 NON WOOD FOREST PRODUCE (OVERLAPPING) WORKING CIRCLE

This working circle includes the total forests of the Yavatmal Division. The Non-Wood Forest Produce (NWFP) also includes medicinal plants available in forests. Objective was to increase the stocking of NWFP yielding and medicinal plant species, ensure sustainable harvesting, and generate employment and alternative source of livelihood. Various treatments were prescribed for NWFPs like Tendu leaves, Mahua, Gum, Custard Apple, Medicinal Plants and Myrabalon.

RESULTS:

Organized collection of Tendu (*Diospyros melanoxylon*) leaves and Sitaphal (*Annona squamosa*) fruits was undertaken. A total revenue of Rs. 11.36 crores and Rs. 19.07 lakhs respectively was generated from Non-PESA and PESA tendu units from 2011 to 2021 from collection of Tendu leaves. And a revenue of Rs. 1.87 Lakhs was generated from auctioning of Sitaphal trees in Kurhad village of Darwah range from 2014 to 2020. Collection of tendu leaves not only helps in generating employment but also improves their livelihood by providing incentives through bonuses. Rest of the NWFPs are collected and disposed of at local level. Special emphasis was laid on increasing the percentage of NWFP and medicinal species in the plantations undertaken. Van Dhan Jan Dhan stall for awareness generation and sale of NWFP and medicinal products was established in Yavatmal town.

11.2.9.6 JOINT FOREST MANAGEMENT (OVERLAPPING) WC

The objectives of this Working Circle included protection of forest and utilizing degraded forest areas for productive purposes in order to meet the demand for fuel, fodder and timber requirements, and to seek cooperation and active participation and local peoples in forest protection.

RESULT:

Yavatmal Forest Division has a total of 251 JFM committees in the forest fringe villages. The total area allotted for these committees is 55,364.38 hectares. This covers around 68% of the total area of the division.

Areas generally degraded with density less than 0.4, open forest with eroded soils are included for JFM activities. JFM committees have taken up plantation activities to the extent of 437 hectares during the previous plan period.

Maharashtra forest department has issued guidelines for grading of JFM committees into A, B and C categories based on various criteria. Based on this, of the 251 committees, 86 committees, 116 committees and 49 committees have been graded into A, B and C category committees respectively. 9 JFMCs have been awarded Sant Tukaram Vangram Yojana Award during the plan period.

11.2.9.7 WILD LIFE MANAGEMENT (OVERLAPPING) WORKING CIRCLE

Entire Forest area of the division is included in this working circle. Fauna of vidarbha landscape is generally found in the Division and it is unevenly distributed throughout the tract. Objectives of management include protection and conservation of wildlife, habitat improvement, involving locals in protection measures, and awareness generation. Prescriptions were given for protection, habitat management, water management, monitoring of wildlife population and wildlife health.

RESULTS:

All major prescriptions were adhered to, but only partially. A network of waterholes is established and maintenance of these is generally lacking. Meadow

development is mainly restricted to the Fodder Improvement working circle, whereas the requirement is in all the working circles. Monitoring of wildlife population is mainly through the once in a year Buddha Poornima census, which lacks scientific basis and credibility. Monitoring of wildlife health is virtually nonexistent. It is crucial considering the recent outbreaks of Covid-19, Lumpy Skin disease and bird flu.

Wildlife rescue operations mainly pertaining to snakes, nilgai, black buck, langurs, monkeys etc straying into human habitations are carried out throughout the year. Snake rescues peak during the monsoon seasons. Documentation of rescue operations is poor and there is general lack of supervision on local NGOs that are involved in the rescue missions. Prescriptions related to establishment of rehabilitation center and forest custody are not adhered to.

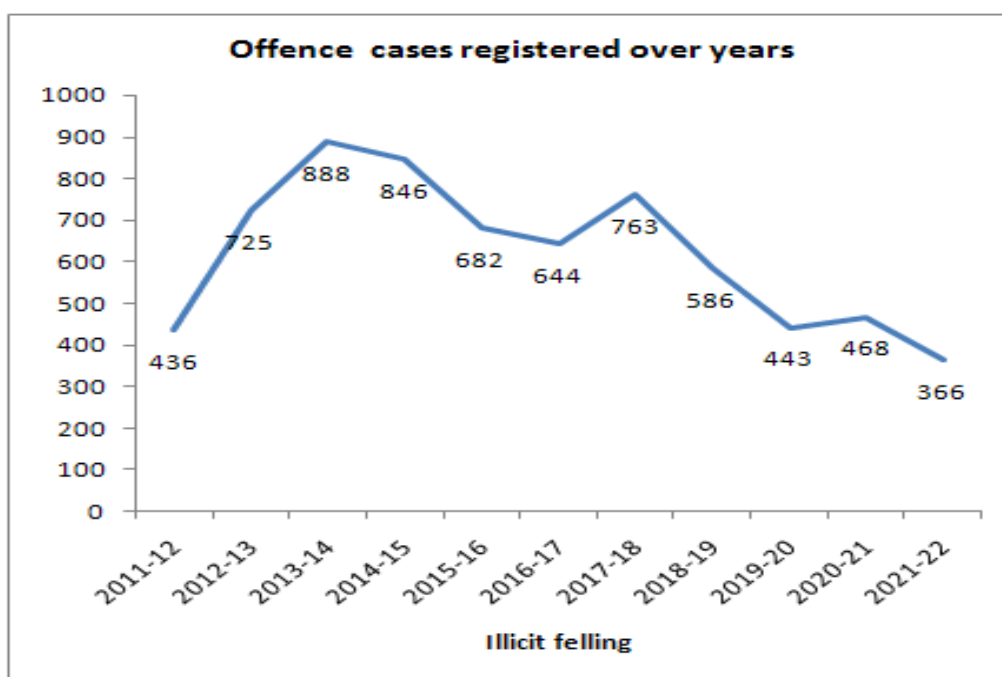
Human wildlife conflict is partly addressed through swift disbursement of compensations for crop damage, human injury and death. Nevertheless, there is resentment among farmers on the fringe villages of forests that the compensation for crop damage is insufficient.

11.2.9.8 FOREST PROTECTION (OVERLAPPING) WORKING CIRCLE

Entire forest area of the division is included in this working circle. The main object was to protect the forest from illicit felling, encroachment, fire and grazing by sensitizing local people about forest protection and involving them in preventing forest offences with their cooperation.

RESULTS:

Illicit Felling: As teak tree constitutes majority of the forest crop and being valuable timber, it is more vulnerable to illicit felling. Over years, there has been a decreasing trend of cases registered under illicit felling mainly owing to increased per capita income of locals and enhanced protection measures as depicted in the chart below:



And, the recovery of timber lost due to illicit felling stands at 85.62 %. The details are given in the table below:

TABLE NO. 11.7: TIMBER RECOVERED FROM ILLICITLY FELLED TREES

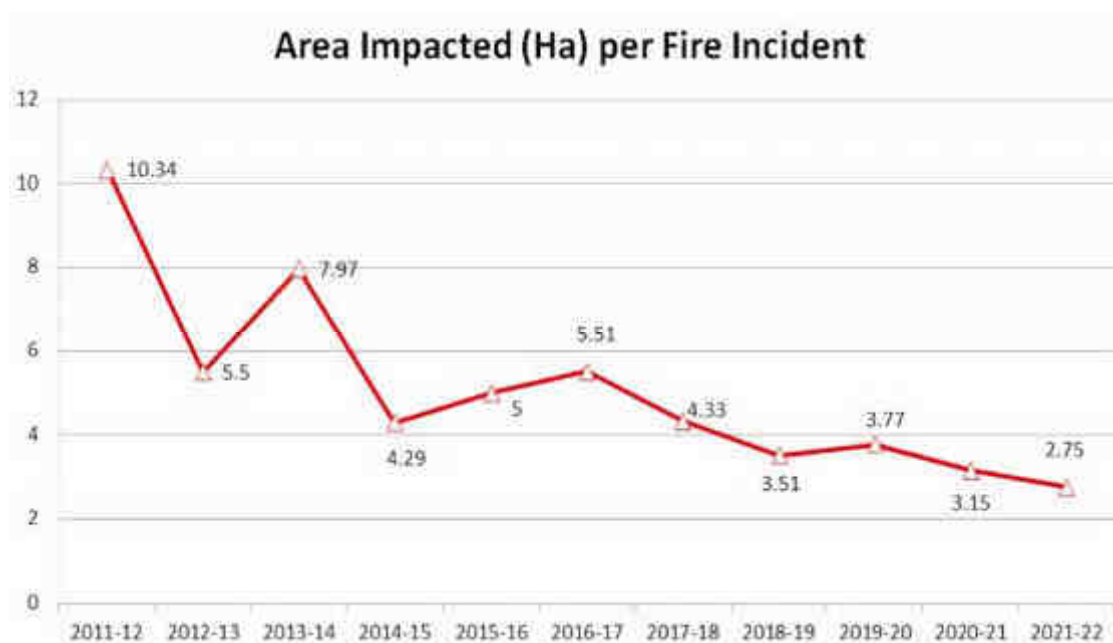
Year	No. of Illicitly Felled Trees	Value of Timber Lost (in Rs. Lakhs)	Value of Timber Recovered (in Rs. Lakhs)	Recovery Percentage (4/3*100)
(1)	(2)	(3)	(4)	(5)
2012-13	3977	21.86	18.34	83.90%
2013-14	4005	23.28	20.36	87.46%
2014-15	1895	11.22	9.74	86.81%
2015-16	2711	24.45	21.81	89.20%
2016-17	2227	17.28	15.01	86.86%
2017-18	2965	25.34	17.88	70.56%
2018-19	1577	10.35	8.53	82.42%
2019-20	1245	7.45	13.38	179.60%
2020-21	2426	12.67	8.17	64.48%

Year	No. of Illicitly Felled Trees	Value of Timber Lost (in Rs. Lakhs)	Value of Timber Recovered (in Rs. Lakhs)	Recovery Percentage (4/3*100)
(1)	(2)	(3)	(4)	(5)
2021-22	1249	6.65	4.24	63.76%
Total	24277	160.55	137.46	85.62%
Average	2428	16.06	13.75	85.62%

Fire: Over the plan period, there have been 646 offence cases associated with forest fire and a total area of 2858.32 ha. has been impacted. However, there has been a declining trend observed in the area impacted per fire incident

TABLE NO. 11.8: INCIDENCES OF FIRE

Sr. No.	Year	No. of cases	Area (Ha)	Area impacted (Ha) per fire incident
(1)	(2)	(3)	(4)	(5 = 4/3)
1	2011-12	22	227.50	10.34
2	2012-13	8	44.00	5.50
3	2013-14	17	135.50	7.97
4	2014-15	31	132.95	4.29
5	2015-16	92	459.54	5.00
6	2016-17	69	379.99	5.51
7	2017-18	120	519.53	4.33
8	2018-19	85	298.65	3.51
9	2019-20	60	226.18	3.77
10	2020-21	110	346.43	3.15
11	2021-22	32	88.05	2.75
	Total	646	2858.32	4.42



The declining trend observed above is majorly due to quick dissemination of fire alerts, modern fire extinguishing equipment such as fire blowers and increased mobility of staff. The prescriptions regarding removal of encroachment and grazing control are partially followed.

11.2.9.9 GENERAL ASSESSMENT OF PAST WORKING PLAN DURING G.R.K. RAO'S WORKING PLAN:

A 20 year felling cycle was fixed in SCI, IWC, AWC and FIWC. Working plan is sanctioned for 10 years. The details of area to be worked / unworked are as under.

TABLE NO. 11.9: DISTRIBUTION OF AREA UNDER RAO'S PLAN

Sr. No.	Working Circle	Total Comp./ Area Worked		No. of Compt./ Area Worked		No. of Compt/ Area Unworked	
		No.	Area Ha.	No.	Area Ha.	No.	Area Ha.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	SCI	148	44825.32	98	40924.50	50	3900.82
2	IWC	47	10102.61	35	9146.22	12	956.39

Sr. No.	Working Circle	Total Comp./ Area Worked		No. of Compt./ Area Worked		No. of Compt/ Area Unworked	
		No.	Area Ha.	No.	Area Ha.	No.	Area Ha.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
3	AWC	280	22326.05	241	20092.85	39	2233.20
4	FIWC	39	7350.24	24	6692.80	15	657.44
	TOTAL :	514	84604.22	398	76856.37	116	7747.85

1. Taking into account guidelines issued by Govt. of Maharashtra in general high yielding coupes are worked through FLCS, and low yielding coupes of all working circles were worked departmentally to promote sustainable regeneration.
2. Certain coupes of IWC were worked through FLCS which is against the plan prescription.
3. Two coupes in the year 2018-19 and eight coupes in the year 2019-20 were worked through Departmental felling as FLCS had refused to work in these coupes due to low yield.
4. Grazing and fire were better controlled in plantations with chainlink/ barbed wire fencing.
5. The SMC works proposed could not be taken up in all coupes due to paucity of funds.
6. The operations prescribed in WP in restorative & productive phases have not been carried out fully in any of the coupes so far in AWC due to paucity and irregular flow of funds.
7. The coppicing vigor of teak and miscellaneous species is reduced over the period due to repeated working under coppice system, resulting in malformed and stunted coppice crop. Teak generally comprises up to 70% of

the total stocking. Natural regeneration normally does not get established due to uncontrolled grazing & fire incidence.

8. Misinterpretation of the provisions of the Scheduled Tribes and other traditional forest dwellers (Recognition of forest rights) Act 2006 resulted in increase in encroachment.
9. Plantations under FDA were taken through JFMC and LPG connections were distributed to the members of active JFMC.

11.2.9.9.1 CBO AND NATURAL REGENERATION

CBO activities have been carried out in 4985.23 ha under SCI and 416.07 ha under IWC. And NR activities have been taken up in 257 ha of SCI. The year-wise achievements as per availability of funds are provided in the following table:

TABLE NO. 11.10: YEAR-WISE ACHIEVEMENTS OF NR & CBO DURING RAO'S PLAN

Year	No of Coupes	Coupe Area (Ha.)	NR (Ha.)	CBO (Ha.)	Expenditure (in Rs. Lakhs)
(1)	(2)	(3)	(4)	(5)	(6)
2012-13	53	4210.68	152	524.06	17.26
2013-14	53	4210.70	0	1235.10	10.45
2014-15	47	3758.56	0	272.26	2.27
2015-16	50	4022.16	0	833.35	29.73
2016-17	50	3948.60	40	1036.36	15.57
2017-18	50	3915.69	0	577.23	8.67
2018-19	48	3838.13	65	0.00	1.97
2019-20	48	3654.65	0	922.94	21.29
Total	399	31559.17	257	5401.30	107.21

Note : Intensive Natural regeneration works including singling of coppice shoots, soil working, stone mulching, cleaning and other tending operations were not taken up as prescribed in WP for want of adequate funds. Only CBO works were carried out.

1. ARTIFICIAL REGENERATION

A target of 870 ha. per year (1100 plants per ha.) was prescribed.

During plan period a total 62.80 lakh plants were planted over 6213.72 ha. Of plantation were carried out under various schemes.

2. SMC WORKS AND PLANTATION:

The details of SMC works carried out under various scheme are provided in Table No.5.2 in Volume-I.

3. SURVEY AND DEMARCATION:

A target of repairing and fixing 2083 boundary pillar per year was prescribed, apart from surveying through DILR, procuring village maps for all villages and maintenance of boundary pillars on an average 560 km per year.

TABLE NO. 11.11: BOUNDARY PILLAR REPAIRS CARRIED OUT DURING RAO'S PLAN

Year	Erecting Boundary Pillars / Varali		Total Pillars (3+4)	Length (Km.)
	Big (1.40 mt.)	Small (0.90 mt.)		
(1)	(2)	(3)	(4)	(5)
2012-13	0	0	0	291.961
2013-14	1105	275	1380	698.810
2014-15	1105	275	1380	687.322
2015-16	1105	275	1380	539.860
2016-17	705	175	880	439.860
2017-18	1105	275	1380	539.086
2018-19	2285	2883	5168	640.690
2019-20	2233	2865	5098	636.688
Total	9643	7023	16666	4474.277

4. FIRE TRACING

Cutting & burning of fire lines to an extent of 2908.12 Km annually was prescribed. The achievements are provided in the table below:

TABLE NO. 11.12: FIRE LINES PREPARED DURING RAO'S PLAN

Year	2015-16	2016-17	2017-18	2018-19	2019-20
(1)	(2)	(3)	(4)	(5)	(6)
Length in Km.	3698.80	5698.80	3698.80	2484.47	2908.12

Position of sanctioned grants against the requirement as per WP prescription is given in the following table:

TABLE NO. 11.13: FUNDS DISPERSED FOR WOKRING PLAN ACTIVITIES DURING RAO'S PLAN

Year	Natural Regeneration		Artificial Regeneration		Survey & Demarcation		Fire & Forest Protection	
	Requir- ement	Funds Provided (Amounts in Rs. Lakhs)	Requir- ement	Funds Provided (Amounts in Rs. Lakhs)	Requir- ement	Funds Provided (Amounts in Rs. Lakhs)	Requir- ement	Funds Provided (Amounts in Rs. Lakhs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2012-13	152.00	17.26	68.80	68.80	10.12	10.12	18.64	18.64
2013-14	0.00	0.00	55.35	55.35	21.03	21.03	26.62	26.62
2014-15	0.00	0.00	54.77	54.77	14.64	14.64	83.51	83.51
2015-16	40.00	29.73	460.90	460.97	19.64	19.64	29.71	29.71
2016-17	0.00	0.00	438.74	438.74	8.91	8.91	68.91	68.91
2017-18	0.00	0.00	146.59	146.59	30.67	30.67	30.38	30.38
2018-19	65.00	1.97	98.49	98.49	11.70	11.70	65.44	65.44
2019-20	0.00	0.00	78.42	78.42	17.52	17.52	34.18	34.18

11.3 SPECIAL WORKS OF IMPROVEMENT UNDERTAKEN

11.3.1 INFORMATION TECHNOLOGY

Maharashtra Forest Department has been deploying information and communication technologies for better forestry management. The main objective is

to systematically organize planning, implementation and monitoring of forestry and other related operations by systematic collection, storage and retrieval of MIS and geospatial data through a computer based communication network. This will not only bring transparency, responsibility and accountability but will also enhance efficiency. These initiatives plan to achieve its objective by using ICT to set up e-Governance framework for information availability and tracking of forestry related activities across the supply chain while involving citizens, villagers and other stakeholders in the entire process. Maharashtra Government has taken decision of computerisation of state's Forest department vide Resolution dated October 5, 2011. Accordingly, infrastructure was developed to connect all offices from beat guard to headquarters of Maharashtra Forest department, Nagpur and Mantralaya, Mumbai by LAN and internet connectivity. IT cell has been developed at head quarters in Nagpur equipped with computers and independent server farms. A consultant has been appointed to bridge the technical component and IT savvy personnel have been appointed to develop various applications required for forestry activity and services.

11.3.2 PDA (PERSONAL DIGITAL ASSISTANT)

PDAs were distributed to the field staff of the division. These devices were pre-loaded with applications on offence reporting, fire incidences, beat checking, etc. in which incidences of fire and other illicit activities can be tracked more accurately with geo-tagged photos and Latitude-Longitude details. This helps in capturing real time data and monitoring forestry activities. The application enables registration of offence, taking photograph of seized material and also of offender, if any.

11.3.3 PLANTATION USING PMIS/NMIS

Plantation Management Information System (PMIS) captures district-wise, taluka-wise and village-wise data for registration of plantation sites. Most of these sites are geo-tagged. These sites are tagged with the department's existing Nursery Management Information System (NMIS) to support adequate seedling stock. The

application has also been integrated with the department's existing PMIS to enhance future monitoring of plantation activity.

11.3.4 GREENING OF MAHARASHTRA (50 CRORE PLANTATION PROGRAMME)

Maharashtra Government has implemented the 50 crore plantation programme from 2015-16 to 2019-20. During the implementation of this programme, emphasis was laid on involving the public across all walks of life and other line departments have been involved apart from Forest department. This programme has created a mark movement for Greening of Maharashtra.

11.3.5 GREEN ARMY

To supplement the insufficient manpower with the Forest department, the initiative of Green Army was conceptualised. This initiative has a vision to raise 10 million volunteers to help achieve the nationally mandated forest cover of 33%. To facilitate this vision, green army website (www.greenarmy.mahaforest.gov.in) was launched where interested citizens could get themselves registered to volunteer for this mission.

11.3.6 CENTRALISED CALL CENTRE "HELLO FOREST-1926"

Maharashtra Forest department has started call centre "Hello Forest" with a toll free number 1926 which will handle citizen grievances, suggestions and complaints. This involves participation of public to reduce forest fires, encroachment, poaching and illicit felling as well as to make enquiries regarding citizen services, ecotourism and matters related to forestry.

11.3.7 JALYUKTA SHIVAR ABHIYAN

Maharashtra Government also started the Jalyukta Shivar Abhiyan for taking up intensive soil and moisture conservation works. Under this programme, certain SMC works have been taken up in this Forest Division. The details are given in **Appendix No.XI**. These works will definitely help in improving the soil-moisture regime of the area in long run.



11.3.8 ATAL GHAN VAN YOJANA - MIYAWAKI PLANTATIONS

Miyawaki plantation, also known as the Miyawaki method or Miyawaki technique, is a unique approach to forest restoration and ecological regeneration. Developed by Japanese botanist Akira Miyawaki, this method involves densely planting a variety of native tree species in a small area to create a self-sustaining, biodiverse forest ecosystem. Unlike traditional reforestation methods, which often rely on a single tree species and take years to mature, Miyawaki plantations accelerate the growth process by mimicking natural forests and maximizing vertical layering. These plantations have several benefits, including enhanced biodiversity, improved soil fertility, carbon sequestration, and the creation of microclimates. Miyawaki plantations have gained popularity worldwide as a sustainable and efficient means of restoring degraded land and combating climate change.

Four sites have been planted using Miyawaki Plantation technique under Atal Anand Ghan Van Yojana in the year 2021. The details of the plantations are as follows:

TABLE NO. 11.14: MIYAWAKI PLANTATIONS UNDERTAKEN DURING RAO'S PLAN

Sr. No.	Year of Plantation	Range	Place of Work	Compt. No.	Area in (ha.)	No. of Seedlings Planted	Expenditure Incurred Until 2 nd Year (in Rs. Lakhs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	2020-21	Yavatmal	Umarsara	513	1.00	330000	46.48
2	2020-21	Yavatmal	Wadgaon	512	1.00	330000	40.20
3	2020-21	Ner	Ner	425	1.00	330000	46.41
4	2020-21	Darwha	Darwha	117	0.40	132000	16.08

11.4 PAST YIELD, REVENUE AND EXPENDITURE

The details of yield and revenue realized during the Rao's Plan are given in the table below.

TABLE NO.11.15: YIELD AND REVENUE REALIZED DURING RAO'S PLAN

Sr. No.	Year	Timber		Firewood	
		Quantity (m ³)	Revenue (Rs.Lakhs)	Quantity (m ³)	Revenue (Rs.Lakhs)
(1)	(2)	(3)	(4)	(5)	(6)
1	2012-2013	10763.20	2726.50	1626.68	30.23
2	2013-2014	5791.92	1162.73	1405.34	35.31
3	2014-2015	2400.95	446.78	1202.31	19.64
4	2015-2016	2482.91	549.37	889.52	19.76
5	2016-2017	2604.73	701.99	636.68	22.24
6	2017-2018	3066.55	743.12	426.31	8.48
7	2018-2019	1903.80	466.71	483.72	12.09
8	2019-2020	1708.45	380.99	94.42	2.54
9	2020-2021	1310.01	337.60	519.17	21.76
10	2021-2022	721.56	189.06	204.31	7.34
	Total :	32754.03	7704.85	7488.46	179.39

11.5 NECESSARY PERMISSION AND DOCUMENTS

The Period of G.R.K. Rao's Working Plan from 2012-13 to 2021-22. The one year working scheme (2022-23) was sanctioned by MoEFCC, Government of India Regional Office, Nagpur. In one year gap of 2023-24 justification and clarification of all activities carried out in Yavatmal Forest Division without sanctioned of working scheme or plan was given in a Contents Part-II Chapter No.17 Page No.410 to 482.

CHAPTER – 12

STATISTICS OF GROWTH AND YIELD

12.1 INTRODUCTION: What gets measured gets managed. Statistics play a crucial role in the effective management of forests, particularly when it comes to assessing and optimizing growth and yield. Statistical analysis helps in identifying trends, patterns, and variations in growth and yield, allowing informed decisions about sustainable harvesting, silvicultural treatments, and long-term planning. By using statistical tools, responsible and efficient use of forest resources can be ensured while maintaining the health and biodiversity of these valuable ecosystems. Growth and yield estimates of Yavatmal Division are carried out through enumeration exercise and stem analysis.

12.2 TREE ENUMERATION

SOFR unit, Amravati, has completed the enumeration of forest resources in Yavatmal forest division during 2022-23. The entire area of forest division was considered for sampling enumeration. The trees are enumerated in girth classes from 15 cm and above. The girth was scientifically measured at breast height (gbh). This data was correlated with stock maps prepared by field units and also compared with satellite imagery before the compartments were allotted to various working circles.

The statistical sampling method namely “Systematic Line Plot Sampling with Random Start” was used for tree enumeration. The plot size is of 50”x50” (50 seconds x 50 seconds) i.e. 225 ha. In each plot, 0.1 ha plot was enumerated. The complete enumeration of trees, natural regeneration, grass and medicinal species were carried out in these plots. In the same way, qualitative measurements were also carried out. The enumeration data was analysed by Forest statistician in the O/o PCCF (ITP).

The total growing stock (trees/ha) as per analysis of enumeration data is 253.60 out of which 174.15 is teak and 79.45 is of miscellaneous species. The results of enumeration data is given in the following table:

TABLE NO. 12.1 : WORKING CIRCLE WISE AND CATEGORY WISE VOLUME IN CUM PER HA AS PER 2022 ENUMERATION

Sr. No	Working Circle	Volume in cum per Ha.				
		General Utility Species	Special Utility Species	Minor Forest Produce Species	Other Species	Total (Σ3to 6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	SCI	41.98	6.32	5.94	1.93	56.22
2	IWC	32.50	6.31	5.51	2.58	46.91
3	AWC	2.67	0.75	4.73	0.75	8.90
4	FIWC	11.97	4.48	6.31	0.96	23.69

TABLE NO. 12.2: GIRTH CLASSWISE NUMBER OF SOUND TREES PER HA AS PER 2022 ENUMERATION

Girth Class (cm)	15-30	31-45	46-60	61-75	76-90	91-105	106-120	121-135	136-150	Above 150	Total (Σ2to 11)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SCI	67	74	67	48	32	17	8	3	2	1	319
IWC	75	95	79	40	21	11	5	2	1	1	331
AWC	63	33	14	4	3	1	1	0	0	0	120
FIWC	76	59	32	15	9	5	3	1	1	1	202

12.2.1 Volume Equation: It is a mathematical formula estimating total wood volume based on three measurements like DBH and Height

The Volume Equations of predominant tree species prescribed by FSI in India State of Forests Report 2017 are as under:

TABLE NO. 12.3: VOLUME EQUATIONS OF VARIOUS SPECIES

Sr. No	Species		Volume equation
	Local Name	Scientific Name	
(1)	(2)	(3)	(4)
1	Saag	<i>Tectona grandis</i>	$V = 0.032011 - 0.995474xD + 9.91129xD^2$
2	Dhavda	<i>Anogeissus latifolia</i>	$V = 0.061856 + 7.952136 \times D^2$
3	Tendu	<i>Diospyros melanoxylon</i>	$V = 0.033867 - 0.975148xD + 8.255412 + D^2$
4	Palas	<i>Butea monosperma</i>	$V = 0.18573 - 2.85418xD + 15.03576xD^2$
5	Moha	<i>Madhuca indica</i>	$V = 0.074069 - 1.23002xD + 7.726902xD^2$
6	Ain	<i>Terminalia tomentosa</i>	$V = 0.060344 - 1.569539xD + 12.090296xD^2$
7	Mowai	<i>Lannea coromandilica</i>	$V = 0.093318 - 1.531417xD + 9.01159xD^2$
8	Lenda	<i>Symplocos racemosa</i>	$V = 0.06466 - 1.371984xD + 9.629971xD^2$
9	Salai	<i>Boswellia serrata</i>	$V = 0.050452 - 1.228748xD + 9.123381xD^2$

V: Volume of the tree

D: Diameter at breast height

12.3 STEM ANALYSIS

During the revision of working plan, stem analysis was carried out by Working Plan Office, Yavatmal in 2023. The stem analysis of teak coppice and seed origin was

carried out by selecting four representative teak trees of seed origin and coppice origin for site quality III from comp. no. 21 of Belora beat (South Arni range), compt. no. 339 of Nanza beat (Jodmoha range) and comp. no. 43 of Shendursani beat (North Arni range).

Four representative teak trees of seedling origin and coppice origin for site quality IV were selected from comp. no. 339 of Nanza beat (Jodmoha range), comp. no. 43 of Shendursani beat (North Arni range) and comp. no. 471 of North Umarda beat (Yavatmal range).

The results obtained have been computed and the following curves were drawn.

1. Age/diameter curve
2. Height/age curve and
3. Age/volume curve

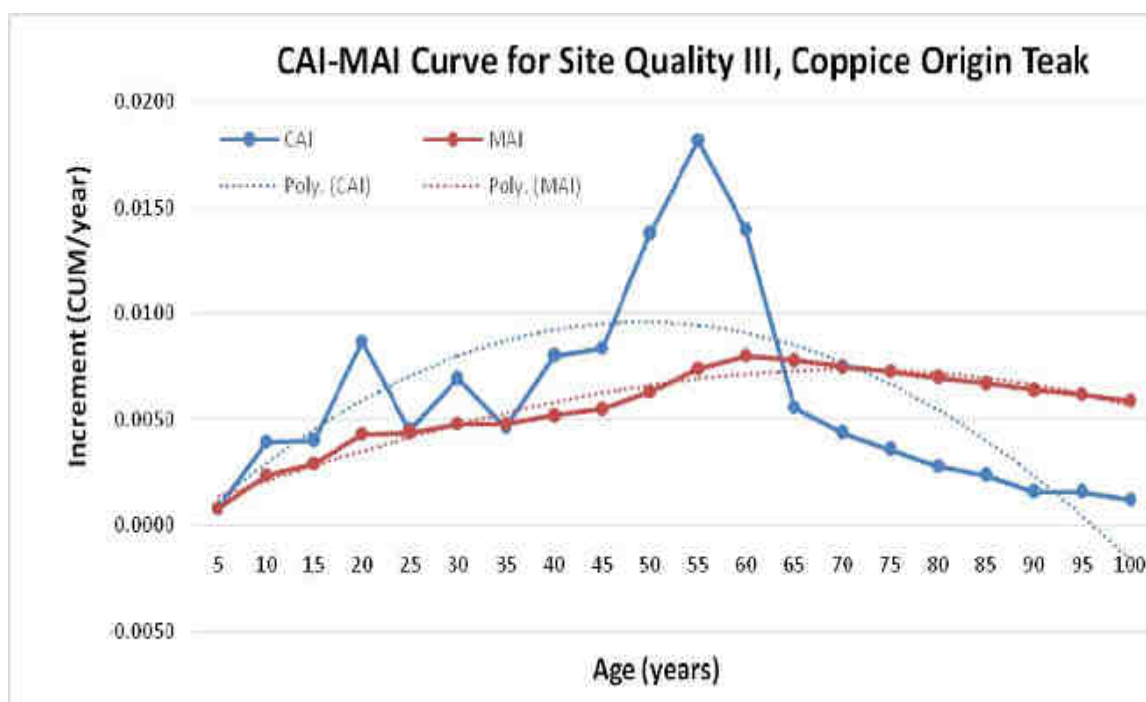
TABLE NO. 12.4: DETAILS OF TREES FELLED FOR STEM ANALYSIS

Sr. No.	Site Quality	Range	Round	Beat	Compt. No.	No. of Trees Selected	
						Seedling Origin	Coppice Origin
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	III	S. Arni	Anjankhed	Belora	21	1	-
2		S. Arni	Anjankhed	Belora	21	-	1
3		Jodmoha	Jodmoha	Nanza	339	1	-
4		N. Arni	Lonbehal	Shendursani	43	1	-
5	IV	Jodmoha	Jodmoha	Nanza	339	-	1
6		N. Arni	Lonbehal	Shendursani	43	-	1
7		Yavatmal	Yavatmal	North Umarda	471	1	-
8		Yavatmal	Yavatmal	North Umarda	471	-	1

The data obtained during stem analysis has been utilized to determine harvestable girth, felling cycle and expected yield. The data of stem analysis with respect to girth, height, volume etc. are given in the following tables.

Table No. 12.5: STEM ANALYSIS FOR COPPICE ORIGIN TEAK (SITE QUALITY III)

Sr. No.	Age (Years)	Height (m)	DBH ob (cm)	GBH ob (cm)	Volume (m ³)	CAI (m ³ /year)	MAI (m ³ /year)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	5	5.4	6.5	20.41	0.004	0.0008	0.0008
2	10	7.2	11.6	36.424	0.0238	0.00396	0.00238
3	15	8.8	18.0	56.52	0.044	0.00404	0.0029
4	20	10.2	21.0	65.94	0.0874	0.00868	0.0043
5	25	11.5	23.3	73.162	0.11	0.00452	0.0044
6	30	12.7	25.3	79.3164	0.1448	0.00696	0.0048
7	35	13.8	27.0	84.78	0.168	0.00464	0.0048
8	40	15.0	28.6	89.804	0.2082	0.00804	0.0052
9	45	16.0	31.1	97.654	0.25	0.00836	0.0055
10	50	17.1	33.7	105.692	0.319	0.0138	0.0063
11	55	18.1	35.2	110.528	0.41	0.0182	0.0074
12	60	19.0	37.2	116.682	0.48	0.014	0.008
13	65	19.8	38.6	121.204	0.508	0.0056	0.0078
14	70	20.6	39.2	123.088	0.53	0.0044	0.0075
15	75	21.4	40.7	127.798	0.548	0.0036	0.0073
16	80	22.1	41.7	130.938	0.562	0.0028	0.007
17	85	22.7	42.6	133.764	0.574	0.0024	0.0067
18	90	23.3	43.4	136.276	0.582	0.0016	0.0064
19	95	23.9	44.0	138.16	0.59	0.0016	0.0062
20	100	24.5	44.6	140.044	0.596	0.0012	0.0059

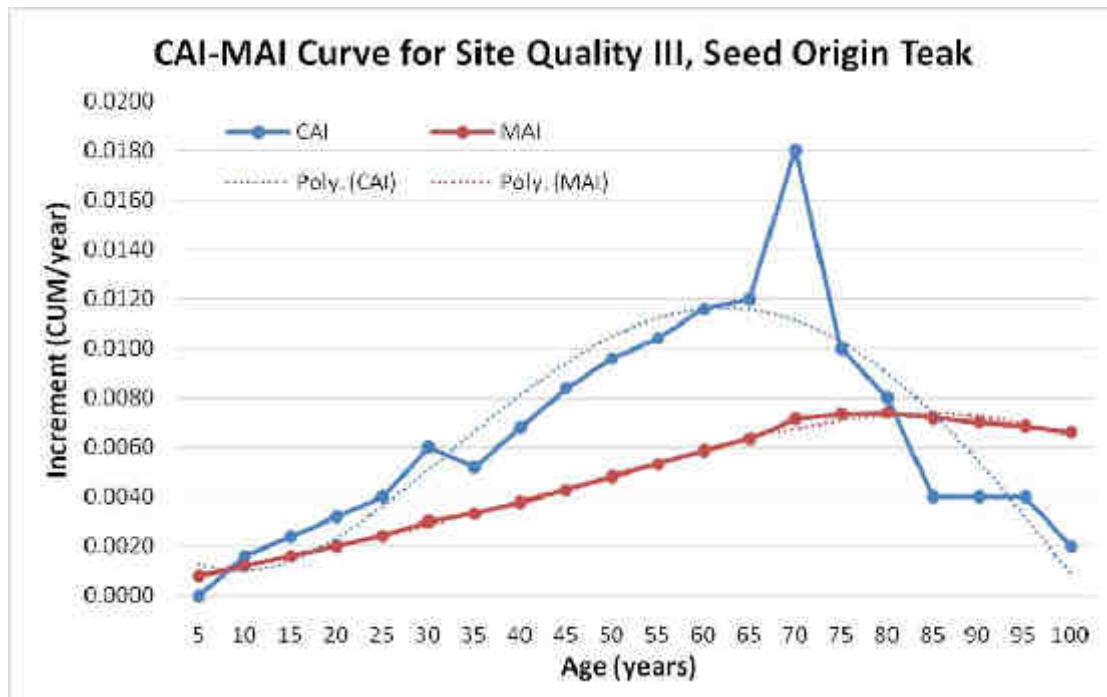


The periodic CAI and MAI curves intersect at 70th year. The GBH (OB) corresponding to this exploitable age is 123 cms.

Table No. 12.6: STEM ANALYSIS FOR SEED ORIGIN TEAK (SITE QUALITY III)

Sr. No.	Age (Years)	Height (m)	DBH ob (cm)	GBH ob (cm)	Volume (m ³)	CAI (m ³ /year)	MAI (m ³ /year)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	5	2.20	6.00	18.84	0.004	0.0008	0.0008
2	10	7.24	8.60	27.004	0.012	0.0016	0.0012
3	15	9.70	11.50	36.11	0.024	0.0024	0.0016
4	20	11.10	14.42	45.2788	0.04	0.0032	0.0020
5	25	12.00	18.00	56.52	0.06	0.0040	0.0024
6	30	13.00	20.96	65.8144	0.09	0.0060	0.0030
7	35	13.80	23.50	73.79	0.116	0.0052	0.003314
8	40	14.70	25.77	80.9178	0.15	0.0068	0.00375
9	45	15.50	27.50	86.35	0.192	0.0084	0.004267
10	50	16.40	28.88	90.6832	0.24	0.0096	0.0048

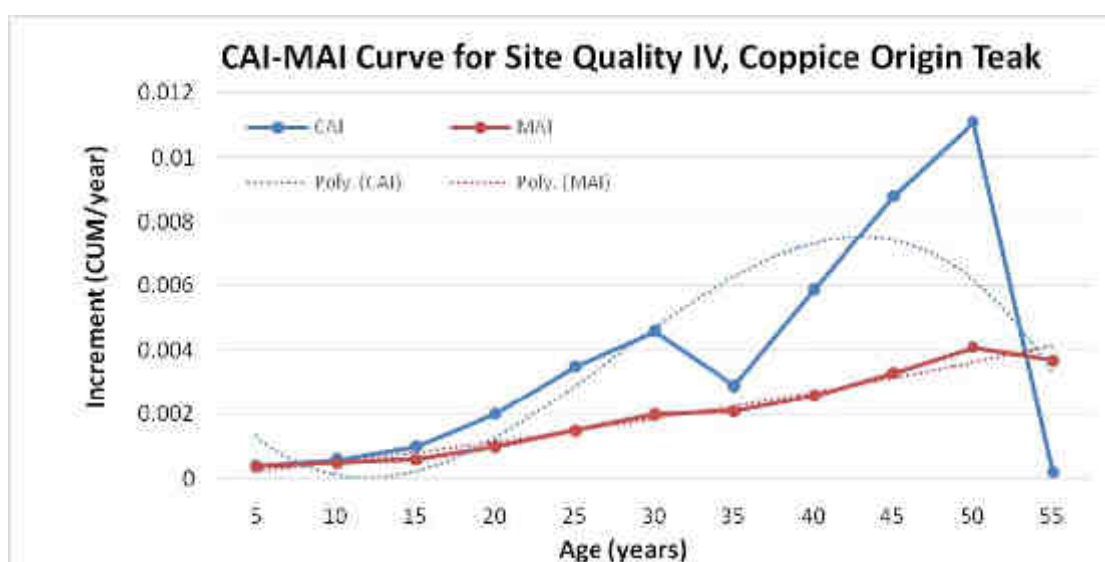
Sr. No.	Age (Years)	Height (m)	DBH ob (cm)	GBH ob (cm)	Volume (m ³)	CAI (m ³ /year)	MAI (m ³ /year)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
11	55	17.00	31.00	97.34	0.292	0.0104	0.005309
12	60	17.70	33.54	105.3156	0.35	0.0116	0.005833
13	65	18.30	35.30	110.842	0.41	0.012	0.006308
14	70	18.80	36.90	115.866	0.5	0.018	0.007143
15	75	19.40	37.60	118.064	0.55	0.01	0.007333
16	80	20.00	38.20	119.948	0.59	0.008	0.007375
17	85	20.70	38.90	122.146	0.61	0.004	0.007176
18	90	21.20	39.60	124.344	0.63	0.004	0.007
19	95	21.70	40.10	125.914	0.65	0.004	0.006842
20	100	22.20	40.50	127.17	0.66	0.002	0.0066



The periodic CAI and MAI curves intersect at 85th year. The GBH (OB) corresponding to this exploitable age is 122 cms.

Table No. 12.7: STEM ANALYSIS FOR COPPICE ORIGIN TEAK (SITE QUALITY IV)

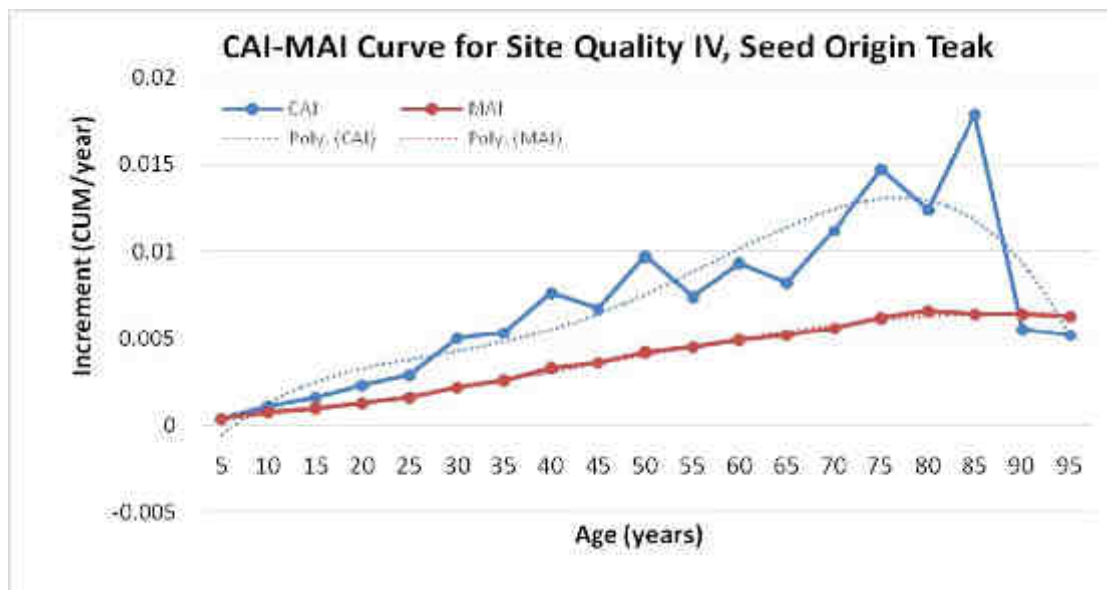
Sr. No.	Age (Years)	Height (m)	DBH ob (cm)	GBH ob (cm)	Volume (m ³)	CAI (m ³ /year)	MAI (m ³ /year)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	5	4.60	3.20	10.04	0.002	0.0004	0.0004
2	10	6.30	6.16	19.34	0.005	0.0006	0.0005
3	15	8.20	8.00	25.12	0.01	0.001	0.0006
4	20	10.30	9.96	31.27	0.0202	0.002	0.001
5	25	12.50	13.00	40.82	0.038	0.0035	0.0015
6	30	14.10	15.90	49.92	0.0614	0.0046	0.002
7	35	15.40	17.50	54.95	0.076	0.0029	0.0021
8	40	16.50	18.90	59.34	0.1059	0.0059	0.0026
9	45	17.30	21.00	65.94	0.15	0.0088	0.0033
10	50	18.10	22.86	71.78	0.2059	0.0111	0.0041
11	55	18.80	23.80	74.73	0.2071	0.0002	0.0037



The periodic CAI and MAI curves intersect at 54th year. The GBH (OB) corresponding to this exploitable age is 74 cms. The exploitable girth is hence fixed at 75 cms for coppice origin Teak trees.

Table No. 12.8: STEM ANALYSIS FOR SEED ORIGIN TEAK (SITE QUALITY IV)

Sr. No.	Age (Years)	Height (m)	DBH ob (cm)	GBH ob (cm)	Volume (m ³)	CAI (m ³ /year)	MAI (m ³ /year)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	5	3.10	4.00	12.56	0.002	0.0004	0.0004
2	10	5.20	6.86	21.54	0.0077	0.0011	0.00077
3	15	6.60	9.10	28.57	0.016	0.0016	0.001
4	20	7.60	11.91	37.39	0.0275	0.0023	0.0013
5	25	8.40	14.20	44.58	0.042	0.0029	0.0016
6	30	9.00	16.61	52.15	0.0674	0.005	0.0022
7	35	9.60	19.80	62.17	0.094	0.0053	0.0026
8	40	10.30	22.65	71.12	0.1323	0.0076	0.0033
9	45	10.80	24.70	77.55	0.166	0.0067	0.0036
10	50	11.30	26.75	83.99	0.2148	0.0097	0.0042
11	55	11.70	28.50	89.49	0.252	0.0074	0.0045
12	60	12.20	30.31	95.17	0.2987	0.0093	0.0049
13	65	12.7	31.60	99.22	0.34	0.0082	0.0052
14	70	13.2	32.91	103.33	0.3963	0.0112	0.0056
15	75	13.5	34.30	107.70	0.47	0.0147	0.0062
16	80	13.7	35.81	112.44	0.5321	0.0124	0.0066
17	85	13.8	37.00	116.18	0.55	0.0179	0.0064
18	90	14.2	38.51	120.92	0.5779	0.0055	0.0064
19	95	14.4	39.80	124.97	0.604	0.0052	0.0063



The periodic CAI and MAI curves intersect at 94th year. The GBH (OB) corresponding to this exploitable age is 124 cms. The exploitable girth is hence fixed at 120 cms for seed origin Teak trees.

PART - II

FUTURE MANAGEMENT

CHAPTER – 1

BASIS OF PROPOSALS

1.1 OBJECTIVES OF MANAGEMENT

This Working Plan is prepared for the scientific management of the forests and wildlife of Yavatmal Forest Division. The primary management objective for the forests of this tract is to treat forests as per the requirement of site so as to optimize growing stock in a manner as mentioned in the preface.

1.1.1 FACTORS INFLUENCING THE GENERAL OBJECTIVES OF MANAGEMENT

Working Plans are technical documents prepared to manage a particular area of forest land on a sustainable basis, with an objective to conserve the bio-diversity, soil and water regime, optimise production of forest products to meet the market needs and also bonafide needs of local people. Various standard scientific treatments, suitable for a particular area, are prescribed to conserve and improve the quality and productivity of the forest to meet the national and global needs in general and the bona fide needs of the local people in particular. While preparing and implementing the plan, it is necessary to examine the National Forest Policy and all relevant laws, rules, policies, court orders and various administrative orders issued by the Government of India and Maharashtra, so that all the prescriptions are brought under the umbrella of existing policy framework.

1.1.1.1 NATIONAL FOREST POLICY

National forest policy for India was first enacted in 1894. This policy considered public benefit as the main objective of public forest management. It suggested the maintenance of forests in hilly areas for preservation of climatic conditions and protection of agriculture from hill torrents. The main objectives of the forest policy 1894 were-

1. To preserve climatic and physical conditions of the country.

2. To preserve minimum amount of forest necessary for general well being of the country.
3. Priority to cultivation over forestry.
4. To meet the public demands for forest produce at concessional rates on priority in comparison to revenue consideration.
5. Realization of maximum revenue after meeting the demands of local people.

1.1.1.2 NATIONAL FOREST POLICY, 1952

The Indian Republic formulated its first National Forest Policy in 1952. The factors that influenced the policy makers were deteriorating environmental conditions, world wars, dependency of defence on forest produce and reconstruction schemes on forestry.

The following needs were identified while making forest policy:

1. The need for evolving a system of balanced and complimentary land use.
2. Need for checking of denudation of mountainous regions, erosion along the tree less banks of great rivers and on vast undulating waste lands.
3. Need for establishing tree lands, to ameliorate physical and climatic conditions for general well being of the people.
4. The need for progressively increasing demands for grazing, fire wood, and small timber for agriculture implements.
5. The need for realization of revenue in continuity.

The National Forest Policy, 1952 stated that the State Government can regulate, frame the policies for forest administration and legislation for conservation and utilization of forest resources, provided those policies do not adversely affect the general economy and physical balance of adjoining States and in general the Forest Policy of the Central Government.

1.1.1.3 NATIONAL FOREST POLICY, 1988

The forests have been brought to the concurrent list from the state list with the effect of the 42nd amendment to the Constitution of India which enables the

Central Government to exercise more authority in forestry matters. This was clearly reflected in the National Forest Policy, 1988. The reasons for such changes were, inadequacy of protection measures, diversion of forest lands to non forestry uses, tendency to maximize revenue realization, growing demands for timber, wood and fodder. The Forest Policy of 1988 clearly states that the forests are to be managed mainly for preservation, maintenance, sustainable utilization, restoration and enhancement of natural environments. The governing objects of National Forest Policy are as follows:

1. Maintenance of environmental equilibrium through preservation and restoration of ecological balance.
2. Conserving national heritage by preserving the remaining natural forests with the great variety of flora and fauna which represents commendable biodiversity and genetic resources of the country.
3. Checking soil erosion and desiltation in the catchment areas of rivers, lakes, reservoirs through soil and water conservation measures in order to mitigate floods, droughts and siltation of reservoirs.
4. Substantial improvement in the forests and tree cover in the country through massive afforestation, social forestry programmes specially on denuded, degraded and unproductive lands.
5. Meeting the demands for fuel wood, minor forest produce, fodder and small timber of the rural and tribal populations.
6. Increase the productivity of forest to meet essential needs of the nation.
7. Efficient utilization of forest produce by introducing modern techniques and maximum substitution of wood.
8. Ensuring massive peoples movement by creating awareness and involvement of women for achieving these objects and to minimize the dependency on existing forests.
9. The basic emphasis of the policy is on the management of existing forests and forest lands by protecting and increasing their productivity and conservation of total biological diversity by strengthening and improving the

network of national parks, sanctuaries, biosphere reserves and other protected areas.

The Objectives of Forest Policy, 1988 are as follows

1. Restrictions on schemes and projects which interfere with the forest that cover steep slopes, catchment of rivers, lakes and reservoirs.
2. No working of forests without approval of management plans by the Central Government.
3. Exotic species are not to be introduced without long term scientific trials.
4. The rights and concessions including grazing be regulated by carrying capacity of the forests.
5. The rights and concessions for forest produce of the tribal should be protected and their domestic needs for fuel, fodder, non wood forest produce and small timber for construction should be provided on priority.
6. Forest management plans to take special care about wildlife conservation.
7. Effective action to prevent encroachment on forest land the existing encroachments should not be regularised.
8. Forest based industries should raise their raw material needed by them, making arrangement from private cultivators without depending on forests.
9. Survey of forest resources shall be completed on scientific lines for updating information.

1.1.1.4: NATIONAL FORESTRY ACTION PROGRAMME:

The Government of India has formulated the National Forestry Action Plan in order to reverse the process of degradation of forests and for sustainable development of forests. It is a compressive strategic plan to address major problems of the forestry sector. The major thrust of the National Forestry Action Programme is to enhance the contribution of forestry and tree resources for ecological stability and people centered development through qualitative and quantitative improvement in forest resources.

The Identified Issues in Forestry Sector

The aim of the National Forestry Action Programme is to evolve issue based programme on the lines of provisions of National Forestry Policy, 1988. It is to integrate forestry development programme in the country within the frame work of National five years plans. Under National Forestry Action Programme five interrelated basic issues have been identified and these are the basis of the following programme structure.

The programme targets the rehabilitation and increase in productivity of the degraded forests and enhance in the areas of forest and tree cover to the extent of 33% of the total area of the country within 20 years. The five inter related issues identified and to be addressed in the programme are -

1. Protect existing forest resources.
2. Improve forest productivity.
3. Reduce total demand.
4. Strengthen policy and institutional framework.
5. Expand the forest area.

Programme

i. Protect existing forest resources: It has three mains of sub programmes.

1. Forest Protection
2. Soil and water conservation
3. Protected areas and biodiversity conservation.

These sub programmes include the works of forest survey, demarcation mapping, inventory, bio-diversity conservation, protected area management, stringent protection against boundary defacing, encroachment, fires, poaching, etc.

ii. Improve forest productivity: The main sub programmes identified are -

1. Rehabilitation of degraded forests.

2. Research and technology development.
3. Development of NWFP.
4. Assisting private individuals with community participation.

These sub programmes involve main aspects of research and enrichment of planting stock, soil and water conservation, technology improvement, regeneration, rehabilitation and afforestation mainly in existing forests.

iii. Reduce total demand: The main sub programmes for the efficient usage of fuel wood, fodder, timber and NWFP.

The main aspects in this programme are technology improvement in preservation, seasoning, substitutions and other measures or efficient utilization of forest products, reduction in wastage of forest produce and also through extensive bio mass plantations.

iv. Strengthen policy and institutional frame work: The sub programmes are-

1. Central forests administration
2. Central forestry institutions
3. State forestry administration and institutions

These sub programmes include development of infrastructure facilities like buildings, communication etc. and strengthen of skills of staff including Human Resources Development. These issues cover all the aspects of capacity building forest policy and litigation, public forest administration and organizational structure, research, planning and budgeting etc.

v. Expand the forest area: The two sub programmes are

1. Tree plantation on forest and outside forest lands
2. Peoples' participation in plantation and its protection.

The aspects of extensive forestry programme in all kinds of waste lands and marginal farm lands through creation of plantation forest by taking up waste land reclamation, afforestation, promotion of agro forestry.

The Objectives of National Forest Action Programme are as follows

1. To achieve sustainability of the forest, productivity of forest plantations to be enhanced at least 3 to 5 cubic meter per ha, per annum, by regeneration and enrichment plantations.
2. Improvement of hygiene of the forest through perpetual silviculture practices.
3. Efforts are to be made to bring 1/3rd geographical area of the country under forests and tree cover by plantations on all category of waste lands on farm lands (Agro-forestry).
4. Expansion of protected area network and maintenance of biodiversity conservation.
5. Non forest waste lands to be planted with mostly fuel wood species as 70% of wood produced from the forest is used as fuel wood. The species of industrial wood and pulp wood may be increased in farm forestry.
6. Peoples' participation in protection and development of degraded forests and fringe forests to be strengthened.
7. Non-wood forest species to be developed and value addition may be promoted at village level.
8. Regulation of grazing in forest as per the carrying capacity and silvicultural needs.
9. Infrastructure for forest inventory, research and development to be strengthened. Human resource development should also be improved.
10. Investment for sustainable development of forest should be rational and in proportionate to the total production.
11. Supreme Court rulings and other rules of the land should scrupulously be followed.

1.1.1.5 NATIONAL WILDLIFE ACTION PLAN (2017 - 2031)

1. The Plan is based on the premise that essential ecological processes that are governed or strongly moderated by ecosystems are essential for food production, health and other aspects of human survival and sustainable development.
2. It underlines the fact that despite being one of 17 mega biodiversity countries of the world, national planning has not taken serious note of adverse ecological consequences of reduction and degradation of wilderness areas from the pressures of population, commercialization and development projects.
3. Accordingly, the plan has brought to focus the alarming erosion of our natural heritage comprising rivers, forests, grasslands, mountains, wetlands, coastal and marine habitats, arid lands and deserts.
4. It also keeps in focus the intrinsic value of nature and its manifold components. The maintenance of these ecosystems, which can be termed as 'Life Support Systems' is considered vital for all societies regardless of their stage of development.
5. It emphasizes two other aspects of nature conservation viz. preservation of genetic diversity and sustainable utilization of species and ecosystems, which have a direct bearing on our scientific advancements and support to millions of rural communities.
6. The Plan adopts a landscape approach in conservation of all wildlife i.e. uncultivated flora and undomesticated fauna that have an ecological value to the ecosystem and mankind irrespective of where they occur.
7. It accords special emphasis to recovery of threatened species of wildlife while conserving their habitats which include terrestrial, inland aquatic, coastal and marine ecosystems.
8. It takes note of concerns relating to climate change on wildlife, by integrating actions to be taken for its mitigation and adaptation into wildlife management planning.
9. The plan underscores the increasing need for people's support for conservation of wildlife and to this effect recommends strengthening the 'core –buffer-

multiple use surround 'structure with higher inputs for eco-development, education, innovation, training, extension, conservation awareness and outreach programs. Wildlife health and disaster management have received due attention in this Plan.

10. Management of tourism in wildlife areas with related plough back mechanism, development of human resource and staff welfare has undergone a reorientation in the Plan.
11. The plan is alive to communities, inhabiting forest lands and other wilderness areas, to be treated appropriately in the light of the Forest Rights Act, 2006 keeping in mind their inadequacy of resources and strong dependence on natural biomass resources.

1.1.1.6 SUSTAINABLE DEVELOPMENT GOALS (SDGS)

The Sustainable Development Goals (SDGs) are a set of 17 global goals established by the United Nations in 2015 as part of the 2030 Agenda for Sustainable Development. These goals aim to address social, economic, and environmental challenges to achieve a more sustainable and equitable future. Relevance of each goal to forest management is given below:

Goal 1: No Poverty - Implement programs that promote sustainable livelihoods for forest-dependent communities, such as eco-tourism initiatives, sustainable harvesting practices, or agroforestry projects.

Goal 2: Zero Hunger - Support and promote sustainable food systems that integrate forest resources, such as promoting sustainable gathering practices, supporting community gardens or forest-based agriculture, and facilitating access to nutritious forest products.

Goal 3: Good Health and Well-being - Develop and implement programs that promote the health benefits of forests, such as promoting forest bathing, eco-therapy, and access to forested areas for recreation and physical activities.

Goal 4: Quality Education - Develop educational programs and awareness campaigns to promote forest conservation, sustainable forest management practices, and the importance of biodiversity conservation among local communities, schools, and stakeholders.

Goal 5: Gender Equality - Promote gender equality in forest-related activities by ensuring equal participation and representation of women in decision-making processes, training programs, and employment opportunities within the forest department.

Goal 6: Clean Water and Sanitation - Implement watershed management programs that focus on protecting and restoring forest ecosystems to ensure the provision of clean water sources, preventing soil erosion, and preserving water quality.

Goal 7: Affordable and Clean Energy - Promote the use of sustainable and clean energy sources in forest department operations, such as solar power for forest offices, energy-efficient equipment, and the development of renewable energy projects utilizing forest biomass.

Goal 8: Decent Work and Economic Growth - Create employment opportunities and promote sustainable economic growth through forest-related industries, such as timber harvesting, non-timber forest product trade, eco-tourism, and forest restoration projects.

Goal 9: Industry, Innovation, and Infrastructure - Invest in forest-related research and development to enhance sustainable forest management practices, promote innovative technologies for forest monitoring and conservation, and develop infrastructure for effective forest protection and management.

Goal 10: Reduced Inequalities - Ensure equitable access and benefit sharing of forest resources among local communities, indigenous peoples, and other stakeholders, promoting inclusive forest governance and addressing land and resource rights issues.

Goal 11: Sustainable Cities and Communities - Incorporate urban forest planning and green infrastructure development into city planning processes, ensuring the inclusion of forests and trees in urban areas to improve air quality, mitigate climate change, and enhance community well-being.

Goal 12: Responsible Consumption and Production - Promote sustainable forest-based products and practices, such as sustainable timber harvesting, certification schemes, and responsible sourcing, to encourage responsible consumption and reduce the environmental impact of forest products.

Goal 13: Climate Action - Implement forest-based climate change mitigation strategies, such as forest conservation, reforestation, afforestation, and sustainable forest management, to contribute to global efforts in reducing greenhouse gas emissions and increasing carbon sequestration.

Goal 14: Life below Water - Implement marine and coastal conservation programs that recognize the critical role of forests in maintaining healthy ecosystems, protecting watershed areas that contribute to marine biodiversity and ensuring sustainable coastal zone management.

Goal 15: Life on Land - Promote sustainable forest management practices that safeguard biodiversity, protect endangered species, restore degraded lands, combat deforestation, and conserve forest ecosystems, ensuring the sustainable use of forest resources.

Goal 16: Peace, Justice, and Strong Institutions - Strengthen forest governance and law enforcement mechanisms to combat illegal logging, promote transparency, and ensure the equitable distribution of forest benefits, while fostering community participation in decision-making processes.

Goal 17: Partnerships for the Goals - Foster collaboration and partnerships with local communities, indigenous peoples, NGOs, academia, and other stakeholders to enhance knowledge sharing, capacity building, and resource mobilization for sustainable forest management and conservation efforts.

1.1.1.7 UNITED NATIONS DECADE ON ECOSYSTEM RESTORATION

The United Nations Decade on Ecosystem Restoration, which runs from 2021 to 2030, aims to promote and support the restoration of ecosystems worldwide. While the exact principles of the Decade are not explicitly defined, there are several key principles that underpin its objectives and actions. These principles include:

1. **Collaboration and Partnership:** The Decade emphasizes the need for collaboration and partnerships at various levels, including governments, non-governmental organizations, local communities, indigenous peoples, and the private sector. It recognizes that ecosystem restoration requires collective efforts and expertise from multiple stakeholders.
2. **Inclusive and Participatory Approach:** The Decade promotes an inclusive and participatory approach that involves the engagement of local communities, indigenous peoples, and other stakeholders in decision-making processes related to ecosystem restoration. It recognizes the importance of integrating traditional knowledge and practices.
3. **Science-Based and Evidence-Informed:** Ecosystem restoration efforts under the Decade are guided by scientific research, best practices, and evidence-based approaches. This ensures that restoration actions are effective, sustainable, and based on a sound understanding of ecosystems.
4. **Landscape and Ecosystem-Level Restoration:** The Decade recognizes the importance of restoring entire landscapes and ecosystems, rather than focusing on individual species or isolated areas. It encourages an integrated approach that considers the interconnectedness of different ecosystem components.
5. **Sustainable Land and Water Management:** The Decade highlights the need for sustainable land and water management practices as a crucial component of ecosystem restoration. It promotes the adoption of approaches that enhance soil health, water conservation, and biodiversity conservation.

6. **Climate Change Mitigation and Adaptation:** Ecosystem restoration plays a vital role in climate change mitigation and adaptation. The Decade emphasizes the importance of restoring ecosystems to enhance their capacity to sequester carbon, reduce greenhouse gas emissions, and build resilience to climate change impacts.
7. **Financial and Technical Support:** The Decade recognizes the need for adequate financial and technical support to enable and scale up ecosystem restoration efforts globally. It calls for increased investment and the mobilization of resources to support restoration initiatives.
8. **Monitoring, Evaluation, and Learning:** The Decade emphasizes the importance of monitoring, evaluating, and learning from restoration activities. This enables the assessment of progress, identification of effective strategies, and sharing of lessons learned to improve future restoration efforts.

1.1.1.8 OTHER FACTORS INFLUENCING THE GENERAL OBJECTS OF MANAGEMENT

The major factors influencing the objects of management are given below:

1. The Yavatmal Forest Division has forests with a canopy cover density ranging from 0.1 to 0.7, including scrub, open forest, and medium dense forests. These forests have been managed using coppice with standard system and coppice with reserve system in previous working plans, resulting in their degradation.
2. Due to low site quality, excessive biotic pressure, and frequent fire incidents, natural regeneration is inadequate. The plan should include provisions for improving natural regeneration and root stock management. Artificial regeneration will be used to supplement natural regeneration in areas lacking or having insufficient natural regeneration.

3. Teak occupies 70% of the forest composition, highlighting the need to enhance the presence of miscellaneous species in the forests.
4. The forest tracts experience soil erosion, requiring intensive soil and moisture conservation efforts.
5. Forests are capable of producing medium to large-sized timber.
6. There is demand for small timber, firewood, poles, fodder, and non-timber forest products (NTFP) among local communities.
7. Certain forest patches are rich in wildlife, necessitating habitat improvement measures and effective protection for wildlife conservation throughout the division.
8. NTFP species constitute a significant portion of the forest crop and contribute to the livelihoods of local communities. There is great potential for sustainable economic development of these communities through the conservation of forest resources.
9. Encroachment of forest land received impetus due to enactment of Forest Rights Act, 2006.

1.1.1.9 GENERAL OBJECTS OF MANAGEMENT

1. To preserve and enrich the growing stock in natural forests and to restore all under stocked and degraded areas of the forest with better stocking by taking up soil and moisture conservation measures, and afforestation.
2. To preserve forest cover on hill slopes, along streams, water courses and water bodies to prevent soil erosion, check siltation and preserve catchment areas through treatment of catchment and drainage areas.
3. Suitable tending and rootstock management to stimulate growth of naturally regenerated seedlings and rootstock.

4. Preservation and improvement of forests by harvesting silviculturally available medium to large sized timber on sustainable basis and to meet the demands of local people.
5. Habitat management and protection activities for wildlife in these forests.
6. To effectively protect forests from illicit felling, uncontrolled grazing, fire, poaching and encroachment with the help of local people.
7. To document, increase the availability, production and harvest of NTFP species especially medicinal plants through sustainable means.
8. To meet the biodiversity conservation values and maintain gene pool in natural forests while providing ecological services with the active involvement of people.
9. Site specific eco-development initiatives based on participatory village level microplans to improve ecological status of the area and livelihood of the local communities.
10. To ensure active participation of local communities in forest management, and with Joint Forest Management (JFM) committees receiving priority.
11. To document and protect the diversity and abundance of medicinal plants in the division.
12. Boundary demarcation of forest areas, including forest land under the Forest Rights Act, 2006, should be carried out within a specified timeframe.

1.1.1.10 ANALYSIS AND VALUATION OF THE CROP

During the 2022-23 period, the SOFR unit of Amravati completed the enumeration of forest resources in the Yavatmal Forest Division. The entire forest

division area was considered for the sampling enumeration plan. Trees were enumerated based on girth classes starting from 15 cm and above, with girth measurements taken at breast height (gbh). The data obtained was correlated with stock maps prepared by field units and cross-referenced with satellite imagery to assign compartments to different working circles.

For tree enumeration, a statistical sampling method called "Systematic Line Plot Sampling with Random Start" was employed. The plot size measured 50" x 50" (50 seconds x 50 seconds), which equals 225 hectares. Within each plot, a 0.1-hectare area was surveyed, covering the complete enumeration of trees, natural regeneration, grass, and medicinal species. Additionally, qualitative measurements were conducted in the same manner. The collected enumeration data was then analyzed.

The total growing stock (cum/Ha.) as per analysis of enumeration data is 33.93 out of which 20.38 is teak and 13.56 is of miscellaneous species. The working circle wise results of enumeration data is given in the table below:

TABLE NO.1.1:WORKING CIRCLE WISE RESULTS OF ENUMERATION DATA

Sr.No	Working Circle	Growing stock (Volume in cum per Ha)		
		Teak	Non-teak	Total
(1)	(2)	(3)	(4)	(5)
1	SCI	38.61	17.61	56.22
2	IWC	30.53	16.38	46.91
3	AWC	2.4	6.5	8.9
4	FIWC	9.96	13.73	23.69
Weighted Average		20.38	13.56	33.93

TABLE NO.1.2 FOREST COVER CLASSES (2021)

Forest Cover Type	Area in Ha.	Percentage of Total Area
(1)	(2)	(3)
VDF	873.32	1.05%
MDF	26183.70	31.34%
OF	26273.52	31.45%
Scrub	1945.57	2.33%
No Vegetation	25014.34	29.94 %
Water	776.68	0.93 %
Unmapped	2467.48	2.95 %
Total	83534.61	100 %

Details of classes of forests in different compartments are given in **Appendix No. XX** of Volume-II.



1.1.1.9 FUNCTIONAL CLASSIFICATION OF FOREST

The Government of Maharashtra vide G.R. No. MEP-1365/132211-Y, Dt. December 6, 1968 classified the state forest into the following categories:

1. Protection Forests

This category consist of forest on very steep slopes, 25° and above and the forest situated along river banks, the forest that have depleted on account of maltreatment and heavy biotic pressure and further harvesting will accelerate soil erosion and affect the agriculture productivity in the lower plains adversely.

The management will aim at improvement of the forest both in quality and quantity and soil and moisture conservation measures.

2. Tree Forests

This includes the forest situated in remote areas where the biotic pressure is negligible and this forest shall be capable of producing large size and commercially valuable timber and other products of economic value.

3. Minor Forests

These forests are situated adjoining cultivated lands and are subjected to heavy biotic pressure. These forests are capable of producing minor timber, fuel wood, fodder and other forest produce to fulfill the needs of the local population.

4. Pasture Lands

The nature of this forest is generally, highly degraded, open sparsely stocked or mostly scrub lands. These lands are unable to produce small timber but provide grazing land to the local cattle.

5. Miscellaneous Forests

This category includes grass reserves and remaining areas. The grass reserves are small patches of forest situated adjoining cultivated lands or habitats. These forests have scrub vegetation capable of producing good quality fodder. The remaining areas in this category are needed for other works, with regard to wildlife habitat; most of the forest track in this division is potential habitat for many kinds of wildlife. Some of the areas are rich in wild flora, especially medicinal plants.

1.2 METHOD OF TREATMENT TO BE ADOPTED

The method of treatment to be adopted is influenced by the situation and condition of forest, status of regeneration of the crop, needs of local people, availability of labour force, staff and resources. Encouragement of natural regeneration wherever present, shall be properly tended for planting operations native tree species shall be preferred and participation of local villagers in forestry operations like afforestation, protection shall be encouraged. Extensive soil and moisture conservation measures shall be taken up. These forests will be effectively

protected from illicit felling, encroachment, unregulated grazing and repeated forest fires.

1. Tree Forests

This type of forests includes the better quality forests, especially of good site quality, capable of producing medium to large sized timber. These areas shall also be treated under Selection cum Improvement Working Circle. Tending of natural regeneration, wherever it is adequate and areas having inadequate natural regeneration will be planted with suitable valuable species. Steep slopes will be excluded from harvesting operations but soil and moisture conservation will be taken up.

2. Minor Forests

These forests represent mostly site quality 'IVB' and to a limited extent site quality 'IVA' dominated by teak. These types of forest are generally situated in Yavatmal, Jodmoha, Ner & Darwha ranges. The well stocked forest of this category are proposed to be treated under Improvement Working Circle. These forests are capable of producing small timber and fuel wood. In this area, extensive soil and moisture conservation works along with gap plantation is prescribed.

Areas having sparse tree crops, open areas without tree growth and isolated small forest patches are included in the Afforestation Working Circle (AWC). In such areas, the focus would be upon tending of existing natural regeneration and rootstock; in natural regeneration management, the seedlings of seed origin of desirable species will be given preference over the coppice. If natural regeneration is insufficient then it will be supplemented by seedling plantations, wherever necessary. Involvement of the local community is considered focal for management of such areas as well as afforestation of open areas and isolated patches.

3. Pasture Forests

The compartments and areas close to the habitations which are unsuitable for raising timber crops due to their refractory nature, heavy biotic pressure and

grass birs have been proposed to be managed under Fodder Improvement Working Circle.

4. Miscellaneous Forests

These areas are transferred to other department in the past and yet to be denotified are proposed to be kept under miscellaneous working circle.

1.3 CONSTITUTION OF WORKING CIRCLES

The following working circles have been proposed based on the objects of management and methods of treatment.

1. Selection-cum-Improvement working Circle
2. Improvement Working Circle
3. Afforestation Working Circle
4. Fodder Improvement Working Circle
5. Miscellaneous Working Circle

A separate chapter for each of the following has been included in the plan.

1. Wildlife Management
2. Non Timber Forest Produce
3. Joint Forest Management
4. Maintenance and enhancement of forest health and vitality
5. Management of spiritual, cultural aspects of forests and eco-tourism

1.3.1 DISTRIBUTION OF AREAS TO VARIOUS WORKING CIRCLES

The allocation of forest areas under various working circles of the current working plan has been given in the table below.

TABLE NO.1.3:WORKING CIRCLES AND AREA ASSIGNED

Sr. No.	Working Circle	No. of Compartments	Area in (ha)	Percentage
(1)	(2)	(3)	(4)	(5)
1	SCI	143	41926.46	50 %
2	IWC	88	10975	13 %
3	AWC	227	16919.23	20 %
4	FIWC	110	12472.43	15 %
5	Misc. WC	35	1241.49	1%
Total		603	83534.61	100 %

1.4 PERIOD OF THE PLAN

The period of plan is for 10 years from 2023-24 to 2032-33. The one year of the plan (2022-23) was worked through a Working Scheme sanctioned by MoEFCC, Government of India vide letter no. F.No.WP-42/RON/2017-NGP/11071dt. December 08, 2022. Approval of Working Plan Yavatmal Forest Division for the period of 2023-24 to 2032-33 by Nagpur Regional Office, MoEFCC, Government of India vide letter No.F.No.12-55/98(FOR)/14040 Dt.27.02.2025. The midterm review can be undertaken after 5 years if the situation demands and the proposal shall be moved by the Conservator of Forests (Territorial), Yavatmal.

CHAPTER-2

SELECTION-CUM-IMPROVEMENT WORKING CIRCLE

2.1 SELECTION-CUM-IMPROVEMENT WORKING CIRCLE

The area of this working circle has been marked on a GIS based map of 1:150000 which is appended in the plan and a copy of the same is given in A4 size here.

2.2 GENERAL CONSTITUTION OF THE WORKING CIRCLE

This working circle consists of areas which were earlier assigned to Coppice with Standards, Coppice with Reserves, Selection-cum-Improvement and Miscellaneous working circles. The crop is unevenly aged. These forests were treated under the Coppice with Reserves system prior to Yadav's plan. In Yadav's and Rao's plan, the majority of these areas were treated under Selection-cum-Improvement Working Circle. The forests are predominantly teak forests. Teak constitutes around 66% with 211 trees/ha while miscellaneous species constitute 34% with 108 trees/ha.

2.2.1 AREA ALLOCATION

The information from enumeration data, stock mapping, forest density classes from FSI and compartment wise density classes in digital format were utilized for allotment of this working circle. Forest areas with density of 0.4 and above, which can produce medium to large size timber and poles are included in this working circle. Most of the crop is of site quality IV with a few patches of site quality III. As per the SOFR 2022 enumeration data, 21.22 % of teak trees fall in the girth class above 75 cms. The total forest area included in this working circle is 41926.46 ha. It constitutes 50.02% of the total forest area of the division.

2.2.2 AREA STATEMENT

Range-wise allocation of compartments and area is shown in the table below.

TABLE NO. 2.1: DISTRIBUTION OF AREA IN SCI WORKING CIRCLE

Sr. No.	Range	Total Area (ha) of Range	No. of Compt.	Area Allotted (ha)				% to the Area of Range (8/3*100)	% to the Area of WC
				RF	PF	UF	Total area		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Darwha	15233.90	1	77.03	0	0	77.03	0.51%	0.18%
2	Hiwari	11536.44	30	9755.33	0	0	9755.33	84.74%	23.27%
3	Jodmoha	13370.86	24	7045.05	267.09	0	7312.14	56.07%	17.44%
4	Ner	7180.06	1	311.02	0	0	311.02	4.33 %	0.74%
5	North Arni	10777.78	18	5468.11	0	0	5468.11	51.16%	13.04%
6	South Arni	9172.17	30	8944.96	0	0	8944.96	97.73%	21.33%
7	Wadgaon	7360.99	21	6201.33	0	0	6201.33	85.75%	14.79%
8	Yavatmal	8902.41	18	3856.54	0	0	3856.54	42.24%	9.20%
	Total :	83534.61	143	41659.37	267.09	0	41926.46		100%

2.3 GENERAL CHARACTERISTICS OF VEGETATION

The principal species of the crop is teak with its natural associates like Dhawda, Moha, Ain, Lendia, Salai, Bhirra, Kalamb, Char, etc. As per SOFR Amravati data of 2022-23, the number of teak and miscellaneous trees per hectare is 211 and 108 respectively. The total number of trees per hectare is 319. The site quality conforms to IVa and IVb with some patches of site quality III. The crop is young to middle aged and open at some places. Teak is mostly of coppice origin and the growth is stunted and malformed which constitute about 66% of the total stock. The established regeneration is meager in number though young recruits are seen in some places. The density of the crop is between 0.4 and 0.7.

2.4 FELLING SERIES, CUTTING SECTIONS AND JFM AREAS

Felling Series and Annual Coupes: The entire area of this working circle has been divided into 26 felling Series with an average area of 1613 ha and each felling series is further divided into 20 coupes with an average area of 81 ha. Felling cycle is fixed at 20 years. The details of annual coupes are given in **Appendix No.XXII (A)** and **XXII (B)**.



2.5 BLOCKS, COMPARTMENTS AND JFM AREA (MARKED ON GIS BASED MAPS)

A total of 143 compartments are allotted to this working circle. The details of compartment wise area distribution are given in the table below.

TABLE NO.2.2: COMPARTMENTS ALLOTTED TO SCI WORKING CIRCLE

Sr. No.	Felling Series	Range	Compartments Allotted	Rangewise Allotment of Felling Series Area (ha)	Total Area of the Felling Series
(1)	(2)	(3)	(4)	(5)	(6)
1	Anjankhed	North Arni	12, 43, 44, 45	1088.64	1452.87
2	Anjankhed	South Arni	49	364.23	
3	Belora	South Arni	22, 24, 25, 36, 39	1655.22	1655.22
4	Bhansara	North Arni	31	272.77	1387.13
5	Bhansara	South Arni	37, 38, 41	1114.36	
6	Dhanora	Hiwri	270, 281, 301, 310	896.34	1558.41
7	Dhanora	Wadgaon	335	310.39	
8	Dhanora	Yavatmal	408, 473	351.68	
9	Durg	Wadgaon	332	389.71	1612.98
10	Durg	Jodmoha	341, 368	707.29	
11	Durg	Yavatmal	413	238.37	
12	Durg	Hiwri	507	277.61	
13	Ghatana	Hiwri	269, 273, 279, 307	1409.12	1712.23
14	Ghatana	Wadgaon	337	303.11	
15	Ghui	South Arni	46, 47	561.91	1498.37

Sr. No.	Felling Series	Range	Compartments Alloted	Rangewise Allotment of Felling Series Area (ha)	Total Area of the Felling Series
(1)	(2)	(3)	(4)	(5)	(6)
16	Ghui	Jodmoha	345	373.12	
17	Ghui	Yavatmal	406, 409	563.34	
18	Hiwaleshwar	North Arni	16, 17, 18	1040.08	1522.48
19	Hiwaleshwar	South Arni	42	34.69	
20	Hiwaleshwar	Jodmoha	379	447.71	
21	Hiwari	Hiwri	272, 302, 303, 306	1454.85	1673.79
22	Hiwari	Yavatmal	407	218.94	
23	Jawala	Hiwri	268, 271, 276, 277, 300	1578.27	1655.30
24	Jawala	Darwha	311	77.03	
25	Kelzara	South Arni	20, 21, 23, 28, 30	1621.63	1621.63
26	Kharad	North Arni	260	253.98	1611.3
27	Kharad	Hiwri	500, 501	814.23	
28	Kharad	Wadgaon	502	543.09	
29	Kolambi	Wadgaon	309	433.01	1630.07
30	Kolambi	Hiwri	313, 497	831.22	
31	Kolambi	Jodmoha	378	365.84	
32	Malegaon	South Arni	4, 6, 8, 26, 27, 29	1263.07	1586.43
33	Malegaon	North Arni	14	323.36	
34	Manpur	Hiwri	495, 496, 498, 499	1507.46	1581.52
35	Manpur	Wadgaon	504	74.06	
36	Rajur	Wadgaon	331	383.64	1590.41
37	Rajur	Jodmoha	340, 344, 346	1206.77	
38	Ramgaon	Jodmoha	212, 245, 352, 537	932.75	1662.74
39	Ramgaon	Wadgaon	213, 252	494.06	
40	Ramgaon	Hiwri	275	235.93	
41	Sawali	South Arni	1, 2, 5, 7, 48	1709.45	1709.45
42	Shekalgaon	North Arni	256, 257, 264, 266, 315	1466.61	1683.67
43	Shekalgaon	Wadgaon	298	217.06	
44	Sonkhas Heti	Wadgaon	219, 234, 235, 308	935.52	1739.32

Sr. No.	Felling Series	Range	Compartments Alloted	Rangewise Allotment of Felling Series Area (ha)	Total Area of the Felling Series
(1)	(2)	(3)	(4)	(5)	(6)
45	Sonkhas Heti	Jodmoha	244, 326, 568	494.62	
46	Sonkhas Heti	Yavatmal	469	309.18	
47	Sukali	Jodmoha	324	267.9	1710.15
48	Sukali	Wadgaon	329, 333, 334, 336, 376	1442.25	
49	Waghapur	Yavatmal	470, 471, 472, 474, 475, 477, 492, 533	1507.49	1580.35
50	Waghapur	Hiwri	506	72.86	
51	Watbori	Jodmoha	323, 338, 373, 374, 375	1583.13	1583.13
52	Yelabara	Wadgaon	214, 215	675.43	1608.44
53	Yelabara	Jodmoha	217	933.01	
54	Daheli	South Arni	3, 40	620.4	1642.48
55	Daheli	North Arni	15, 259	660.7	
56	Daheli	Hiwri	267	361.38	
57	Talegaon	Hiwri	304	316.06	1656.59
58	Talegaon	North Arni	32	361.97	
59	Talegaon	Ner	411	311.02	
60	Talegaon	Yavatmal	412, 467, 490	667.54	
	Grand Total			41926.46	41926.46

2.6 SPECIAL OBJECTIVES OF MANAGEMENT

The special objects of management include:

1. To gradually replace coppice teak crop with high forest of seed origin by encouraging establishment of natural regeneration.
2. To increase the stocking of the miscellaneous species.
3. To obtain medium to large sized timber by utilizing the full potential of the site.

4. Encouraging natural regeneration assisted by artificial regeneration by introducing selected germ plasm.
5. To maintain and improve adequate soil cover in the forest areas by taking up intensive soil and moisture conservation measures on watershed basis.

2.6.1 ANALYSIS OF THE CROP

Analysis of enumeration data is provided in the following tables:

TABLE NO.2.3: GIRTH CLASS-WISE GROWING STOCK (TREES/HA.) IN SCI WORKING CIRCLE

Sr. No.	Girth Class (cm)	Teak			Others			Total	
		No.	% w.r.t. Total Teak Spp.	% w.r.t. Total Stock	No.	% w.r.t. Total Misc. Spp.	% w.r.t. Total Stock.	No (3+6)	% w.r.t. Total Stock
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	15-30	33	15.57	12.97	34	31.78	4.05	67	21.00
2	31-45	45	21.23	11.89	29	27.10	5.67	74	23.20
3	46-60	49	23.11	19.72	18	16.82	8.37	67	21.00
4	61-75	40	18.87	12.43	8	7.48	4.38	48	15.05
5	76-90	25	11.79	8.1	7	6.54	2.7	32	10.03
6	91-105	12	5.66	3.24	5	4.67	1.62	17	5.33
7	106-120	5	2.36	1.89	3	2.80	1.08	8	2.51
8	121-135	2	0.94	0.27	1	0.93	0.54	3	0.94
9	136-150	1	0.47	0.27	1	0.93	0.54	2	0.63
10	>151	0	0.00	0	1	0.93	0.27	1	0.31
Total		212	100	70.78	107	100	29.22	319	100

**TABLE NO 2.4 : SPECIES-WISE GROWING STOCK (TREES/HA.) IN SCI WORKING
CIRCLE**

Group/ Species	Girth classwise classification in cms										
	15- 30	31- 45	46- 60	61- 75	76- 90	91- 105	106- 120	121- 135	136- 150	Above 150	Total
Group A :- Species of General Utility											
Teak	32.55	45.32	48.54	39.74	25.32	12.05	4.97	1.62	0.57	0.16	210.85
Ain	1.71	0.81	1.12	0.70	0.97	0.71	0.48	0.19	0.22	0.08	6.97
Lendia	4.15	4.28	2.01	0.59	0.42	0.26	0.08	0.03	0.00	0.01	11.83
Bija	0.00	0.00	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.06
Shisam	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Bibla	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Total	38.42	50.41	51.73	41.04	26.73	13.01	5.53	1.84	0.79	0.26	229.76
Group B :- Species of Special Utility											
Dhawada	1.43	0.83	1.77	1.02	1.02	1.08	0.27	0.23	0.07	0.04	7.78
Garadi	0.14	0.63	0.33	0.11	0.07	0.01	0.01	0.00	0.00	0.00	1.30
Haldu	0.01	0.04	0.18	0.15	0.12	0.07	0.06	0.01	0.03	0.00	0.67
Hiwar	0.41	0.49	0.16	0.19	0.14	0.11	0.01	0.01	0.01	0.04	1.58
Kalamb	0.03	0.01	0.11	0.07	0.06	0.10	0.10	0.08	0.04	0.06	0.64
Khair	0.04	0.25	0.36	0.26	0.14	0.03	0.03	0.00	0.00	0.00	1.09
Moin	0.06	0.04	0.18	0.01	0.27	0.36	0.29	0.06	0.14	0.03	1.42
Salai	0.06	0.06	0.15	0.04	0.23	0.33	0.31	0.27	0.34	0.18	1.97
Sawar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Arjun	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Total	2.17	2.35	3.23	1.86	2.05	2.07	1.08	0.68	0.63	0.36	16.47
Group C :- Species of Minor Forest Produce											
Apta	0.00	0.04	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.06
Awala	0.14	0.03	0.01	0.01	0.04	0.03	0.01	0.00	0.00	0.00	0.27
Behada	0.19	0.11	0.01	0.03	0.04	0.03	0.04	0.03	0.00	0.00	0.48
Bel	0.00	0.08	0.07	0.03	0.11	0.04	0.00	0.01	0.00	0.00	0.34
Biba	0.01	0.06	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.10
Bor	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Charoli	0.04	0.01	0.07	0.01	0.16	0.07	0.03	0.03	0.00	0.00	0.42
Chinch	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.04
Jambhul	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22
Moha	0.03	0.01	0.07	0.08	0.06	0.10	0.14	0.08	0.03	0.11	0.70

Group/ Species	Girth classwise classification in cms										
	15-30	31-45	46-60	61-75	76-90	91-105	106-120	121-135	136-150	Above 150	Total
Neem	0.31	0.07	0.08	0.03	0.01	0.01	0.03	0.00	0.01	0.00	0.56
Palas	14.19	14.49	9.97	4.03	2.17	0.67	0.40	0.18	0.08	0.04	46.21
Shiras	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.03
Tendu	5.73	2.93	0.75	0.16	0.23	0.16	0.08	0.04	0.00	0.01	10.11
Total	20.86	17.85	11.05	4.38	2.85	1.11	0.76	0.37	0.14	0.18	59.54
Group D :- Other Species											
Anjan	0.04	0.03	0.01	0.08	0.21	0.10	0.06	0.03	0.04	0.07	0.66
Babhul	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Bahawa	2.44	0.91	0.10	0.01	0.03	0.00	0.00	0.00	0.00	0.00	3.49
Bharati	0.94	0.16	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15
Bhera	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Bhosa	0.00	0.08	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14
Chichwa	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.03
Dudhi	1.90	1.72	0.91	0.26	0.19	0.10	0.06	0.00	0.01	0.00	5.14
Dudhkhuda	0.10	0.04	0.01	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.23
Ghogar	0.00	0.00	0.01	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.07
Ghoti	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01
Kadamb	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.03
Kharasani	0.00	0.01	0.06	0.18	0.07	0.06	0.01	0.00	0.00	0.00	0.38
Lokhandi	0.18	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.21
Medsing	0.00	0.00	0.04	0.03	0.04	0.07	0.08	0.07	0.03	0.00	0.35
Muli	0.01	0.03	0.08	0.10	0.07	0.16	0.10	0.04	0.01	0.03	0.63
Nirgudi	0.30	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31
Parijat	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Pimpal	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Padari	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.03
Rohan	0.00	0.00	0.01	0.01	0.01	0.03	0.03	0.00	0.00	0.01	0.11
Wad	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Other	0.11	0.07	0.06	0.04	0.06	0.07	0.11	0.01	0.03	0.03	0.57
Total	6.04	3.11	1.42	0.75	0.78	0.69	0.44	0.15	0.12	0.16	13.67
Grand Total :	67.49	73.71	67.44	48.03	32.41	16.88	7.81	3.04	1.68	0.96	319.43

Regeneration:

Data on regeneration status was collected along with enumeration of the crop. The seedlings were enumerated in the following three categories as R1 upto 1 m height, R2 with 1 to 3 m height and R3 above 3 m height. The data is analysed and used to devise prescriptions for natural and artificial regeneration of forest areas. The status of natural regeneration in SCI areas is fair. The total number of seedlings is 297/ha. The table of regeneration is given below:

TABLE NO.2.5: REGENERATION STATUS IN SCI WORKING CIRCLE

Sr. No.	Range	No. of sample plots	No of seedlings/ha			Total
			R1	R2	R3	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	North Arni	75	138	61	41	240
2	Yavatmal	62	202	120	91	412
3	Wadgaon	129	335	143	44	522
4	South Arni	171	164	70	31	265
5	Ner	0	0	0	0	0
6	Jodmoha	117	105	63	84	255
7	Hiwari	190	114	49	21	184
8	Darwaha	2	40	75	235	350
Weighted Average			172	80	45	297

2.6.2 SILVICULTURAL SYSTEM

The silvicultural system is aimed at harvesting matured trees and carrying out improvement felling for removal of malformed trees. The percentage of teak improved over the years which constitute approximately 66% of the growing stock. However, miscellaneous species have not shown substantial increase in composition of the crop. Teak trees of coppice origin would be felled on priority to replace age old coppice trees with teak trees of seed origin. There would be no felling of non teak species. Silvicultural operations like CBO, thinning, cleaning are included in this

system. Thinning would also be carried out to decongest natural regeneration pole crop. Natural regeneration will be given suitable treatments to regenerate the area. Areas poor in natural regeneration will be supplemented by artificial regeneration to increase productivity and density of the crop. Soil and moisture conservation works would also be taken up on watershed basis to protect and improve soil and water regime.

The SCI being a conservative system has been applied to preserve and improve the ecological status of the forest in general. So the silvicultural system adopted is aimed at protecting and tending the seedling regeneration while creating desirable gaps to increase natural regeneration by harvesting mature trees as per silvicultural principles.

2.6.3 ROTATION PERIOD: As per standered silvicultural practice.

2.6.4 HARVESTABLE DIAMETERS

As felling is restricted to only teak trees, harvestable girth is prescribed for teak alone. Stem analysis of teak trees of seed and coppice origin was carried out in 2023 for determining the harvestable girth. Harvestable girth has been determined at maximum volume production as per the CAI and MAI curves in stem analysis exercises for site quality IV forests. Harvestable girth for teak trees of coppice origin is fixed at 75 cm (GBH over bark) and for teak trees of seed origin at 120 cm (GBH over bark). As the site quality III is very limited, separate harvestable girth for site quality III is not prescribed. The harvestable girth prescribed above would be applicable to site quality III also.

2.6.5: REDUCING FACTORS AND REDUCED AREAS: Not Applicable.

2.6.6: FELLING CYCLE: Felling cycle has been fixed at 20 years.

2.6.7: DIVISION INTO PERIODS AND ALLOTMENT TO PERIODIC BLOCK (PB): Not applicable.

2.6.8 CALCULATION OF THE YIELD

Annual yield shall be regulated by area and the efforts are made for making annual coupes as equi-productive as possible. For yield calculation in Selection-cum-Improvement Working Circle was Sagreiya's modification of Brandis' formula is used. Mathematical analysis for K.P. Sagreiya's modification of Brandis' Method of determining the maximum sustained felling of trees of exploitable size from all-aged forest is given as below: If-

- i. The number of trees in Class I (Exploitable Girth Class) is S_1 ;
- ii. The number of trees in classes II, III ... are $s_2, s_3, \dots$;
- iii. The fraction of the trees of classes II, III, ... that survive and are eventually available for harvesting as class trees are $x_2, x_3, \dots$, so that $x_2 s_2 = S_2$; $x_3 s_3 = S_3$; ...
- iv. The trees take $Y_2, Y_3, \dots$ years in classes II, III, ..., so that the average annual recruitments in the class periods are-

$$S_2 / Y_2 = R_2$$

$$S_3 / Y_3 = R_3, \dots$$

- v. The overall average annual recruitment for the entire enumeration period, i.e., $(S_2 + S_3 + \dots) / (Y_2 + Y_3 + \dots) = S / Y$ is say R .
- vi. The felling cycle adopted is f years and
- vii. The accruing average annual recruitment during the 1st, 2nd , ... Cycles is $R', R'', \dots$, so that the recruitments, accruing in successive cycles, i.e. $f R', f R'', \dots$ are given by as follows:

$$f R' = a R_x + (f - a) R_{x+1}$$

$$f R'' = b R_y + (f - b) R_{y+1}, \dots$$

Then the realizable recruitments $R_{r1}, R_{r2}, \dots$ in cycles I, II, ... will be

$$Rr1 = \frac{1}{2} [f R' - a (R' - R_x)],$$

$$Rr1 = \frac{1}{2} [f R'' - a (f R'' - R_y)], \dots$$

Therefore, the prescribed yield should be –

$$1/f [S1 + f R'/2 - a (R' - R_x)/2],$$

$$1/2f [S2 + f (R' + R'')/2 - b (R'' - R_y)/2], \dots$$

As the stock in hand has to be liquidated in 1, 2, ... cycles, to obtain the maximum sustained yield, while the actual recruitment is still less than R.

From this it follows that if the overall annual recruitment R is to be realized on a sustained basis even while the realizable recruitment in a cycle is less than fR, there must be a stock in hand of –

$$SI = f [R - R'/2] + a (R' - R_x)/2],$$

$$SII = f [2R - (R' + R'')/2] + b (R'' - R_y)/2], \dots$$

According as the deficiency continues for 1, 2, 3, ... felling cycles.

2.6.8.1 REGULATION OF YIELD OF TEAK COPPICE TREES

The area in Selection-cum-Improvement Working Circle consists of crop of all age. The girth wise distribution of trees, years to cross the class according to stem analysis of teak tree of Site Quality – IV and selection girth fixed is 75 cm. The prescriptions for regulation of yield for teak coppice trees are narrated below.

TABLE NO.2.6 : DETAILS OF NUMBER OF TREES/HA IN AREA UNDER SCI WORKING CIRCLE

Girth Class (cm)	Total Teak Trees	Non-Teak Trees	No. of Teak Trees of Coppice Origin (65%)	No. of Teak Trees of Seed Origin (35%)
(1)	(2)	(3)	(4)	(5)
16-30	32.55	34.94	21.16	11.39
31-45	45.32	28.39	29.46	15.86

Girth Class (cm)	Total Teak Trees	Non-Teak Trees	No. of Teak Trees of Coppice Origin (65%)	No. of Teak Trees of Seed Origin (35%)
(1)	(2)	(3)	(4)	(5)
46-60	48.54	18.90	31.55	16.99
61-75	39.74	8.29	25.83	13.91
76-90	25.32	7.09	16.46	8.86
91-105	12.05	4.83	7.83	4.22
106-120	4.97	2.84	3.23	1.74
>121	2.35	3.33	1.53	0.82
Total	210.84	108.59	137.05	73.79

In the table above, details of teak and non teak trees per hectare are given based on enumeration data (2022). As the forests were repeatedly worked under CWR system previously, the crop has a considerable stock of coppice origin Teak. For the purpose of calculating yield of coppice trees, it is assumed that 65% of the teak stock consists of coppice origin.

TABLE NO. 2.7: DETAILS OF TEAK STOCK, PERIOD REQUIRED BY TREES TO SWITCHOVER TO NEXT GIRTH CLASS PER HA

Class	Girth Class (cm)	Years in class	Symbol
(1)	(2)	(3)	(4)
	>91		
I	76-90		
II	61-75	13	Y ₂
III	46-60	14	Y ₃
IV	31-45	8	Y ₄
V	16-30	11	Y ₅
Total enumeration period		46	Y

The number of years required by teak trees (of coppice origin) to switch over to next higher girth class is worked out based on stem analysis and graphical curves of age and diameter. For example teak trees of 16 cm girth at breast height (diameter 5.1 cm) will take 8 years to attain that diameter. Teak trees of 30 cm girth (diameter 9.6 cm) will take 19 years for attaining that diameter. Therefore, the number of years teak trees remain in 16-30 girth is 11 years (19-8=11). The same principal can be applied to all girth classes to know the period (years) taken by teak trees to switch over to next higher girth class. In the above table column A, class-I symbol is given for the teak trees in girth class of harvestable girth and above, which is based on enumeration data. Next lower girth is named as class-II and next girth class-III and so on.

The percentage of trees of different girth classes that will attain harvestable girth and silviculturally available for removal will be as below:

TABLE NO. 2.8: DETAILS OF TREES AVAILABLE IN DIFFERENT GIRTH CLASSES FOR HARVESTING PER HA

Class	Girth Class (cm)	Trees/ ha	% of Trees Available as Class I	Symbol	Trees Available as Class I	Symbol
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	>91	12.59	-	-	-	-
I	76-90	16.46	-	-	-	-
II	61-75	25.83	63.72 %	X ₂	16.46	S ₂
III	46-60	31.55	52.17 %	X ₃	16.46	S ₃
IV	31-45	29.46	55.87 %	X ₄	16.46	S ₄
V	15-30	21.16	77.79 %	X ₅	16.46	S ₅
	Total	137.05			65.84	S

In the table above, in column (3) the number of trees present in a girth class is given based on enumeration data. The trees in class-I of 76-90 and above girth class are not considered here because the trees in this girth class are above harvestable girth and it is the stock in hand for harvesting. In column (4) percentage of trees available as a class-I in future are given based on the number of trees to be available in column (3) and (6). As the total number of class-II trees above harvestable girth are 16.46 (61-75 girth class) which means that out of 25.83 trees in class-II, 16.46 trees will switch over to above harvestable girth and the percentage 63.72 % in column (5) the symbol X2, X3 etc. is given for the percentage of trees available as class-I in future corresponding (4). In column (7), symbol S2, S3 etc. is given for number of trees available as class-I in future from each girth class (class-III, class-IV, class-V) as given in column (6). In column (7) at the bottom S indicates the total number of trees available as class-I in future from all girth classes.

For the period Y (46 years) the total recruitment is S, the mean yearly recruitment R is S/Y

$$R = 65.84/46$$

$$= 1.43 \text{ trees per ha / year.}$$

The average annual recruitment per ha during each girth class period namely, $S_2/Y_2=R_2$, $S_3/Y_3=R_3$ will be as given in table below.

TABLE NO. 2.9: DETAILS OF TEAK TREES- ANNUAL RECRUITMENT TO NEXT GIRTH CLASS PER HA

Class	Girth Class (cm)	No of Trees / ha	Years in Class	Symbol	Annual Recruitment to Next Class	Symbol
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	>91	12.59	-	-	-	-
I	76-90	16.46	-	-	-	-
II	61-75	25.83	13	Y2	1.99	R2

Class	Girth Class (cm)	No of Trees / ha	Years in Class	Symbol	Annual Recruitment to Next Class	Symbol
(1)	(2)	(3)	(4)	(5)	(6)	(7)
III	46-60	31.55	14	Y3	2.25	R3
IV	31-45	29.46	8	Y4	3.68	R4
V	15-30	21.16	11	Y5	1.92	R5
	Total :	137.05	46	Y	2.98	R

In the table above the column (6) is obtained by the formula S_2/Y_2 , S_3/Y_3 , S_4/Y_4 , S/Y which gives annual recruitment to the next class. In column (7), R2, R3 etc. indicate annual recruitment to next girth class corresponding to figures in column (6) and R indicates average recruitment to next girth class.

There is stock in hand 29.05 trees /ha (class-I) and there will be recruitment of 65.84 trees/ha in 46 years and thus, theoretically annual yield is : $(65.84 + 29.05)/46 = 2.06$ trees / ha, assuming that the existing stock is to be distributed uniformly, that total class-I trees available at the end of the first year will be only ($S_1 + R_2$) per ha.

Of these, all the S_1 (existing class-I trees) will be available for removal, but when felling proceeds from one end of the annual area to the other, only half of the recruitment of $R_2/2$ trees that will come into class-I in one year over the whole coupe will be realizable. Remaining trees will be passing into class-I thereafter. In other words the total realizable yield from the coupe (No. of trees per ha) will be $(S_1 + R_2/2)$. Similarly for 2nd coupe, before felling commences it will have S_1 trees and also one year's recruitment namely R_2 trees, all of which will be available for removal. Besides this, in coupe I half of the year's recruitment $R_2/2$ will also be available. Thus, in 2nd coupe trees available per ha would be $(S_1 + R_2 + R_2/2)$ and so on.

Thus, for one hectare area of each coupe, realizable and accumulating class-I trees for entire felling cycle would be as given in table below.

TABLE NO. 2.10: CALCULATION OF YIELD FOR 20 YEAR FELLING CYCLE

Sr. No.	Coupe No.	For Coupe Area in Ha	n th year of Operation	Class-I at Hand= S ₁	Realizable Recruitment =	Accruing Recruitment=
					(n-½) R ₂	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	I	1	1	29.05	$\frac{1}{2}R_2 = 1$	$19R_2 + \frac{1}{2}R_2 = 38.84$
2	II	1	2	29.05	$R_2 + \frac{1}{2}R_2 = 2.99$	$18R_2 + \frac{1}{2}R_2 = 36.82$
3	III	1	3	29.05	$2R_2 + \frac{1}{2}R_2 = 4.98$	$17R_2 + \frac{1}{2}R_2 = 34.83$
4	IV	1	4	29.05	$3R_2 + \frac{1}{2}R_2 = 6.97$	$16R_2 + \frac{1}{2}R_2 = 32.84$
5	V	1	5	29.05	$4R_2 + \frac{1}{2}R_2 = 8.96$	$15R_2 + \frac{1}{2}R_2 = 30.85$
6	VI	1	6	29.05	$5R_2 + \frac{1}{2}R_2 = 10.95$	$14R_2 + \frac{1}{2}R_2 = 28.86$
7	VII	1	7	29.05	$6R_2 + \frac{1}{2}R_2 = 12.94$	$13R_2 + \frac{1}{2}R_2 = 26.87$
8	VIII	1	8	29.05	$7R_2 + \frac{1}{2}R_2 = 14.93$	$12R_2 + \frac{1}{2}R_2 = 24.88$
9	IX	1	9	29.05	$8R_2 + \frac{1}{2}R_2 = 16.92$	$11R_2 + \frac{1}{2}R_2 = 22.89$
10	X	1	10	29.05	$9R_2 + \frac{1}{2}R_2 = 18.91$	$10R_2 + \frac{1}{2}R_2 = 20.90$
11	XI	1	11	29.05	$10R_2 + \frac{1}{2}R_2 = 20.90$	$9R_2 + \frac{1}{2}R_2 = 18.91$
12	XII	1	12	29.05	$11R_2 + \frac{1}{2}R_2 = 22.89$	$8R_2 + \frac{1}{2}R_2 = 16.92$
13	XIII	1	13	29.05	$12R_2 + \frac{1}{2}R_2 = 24.88$	$7R_2 + \frac{1}{2}R_2 = 14.93$
14	XIV	1	14	29.05	$13R_2 + \frac{1}{2}R_2 = 26.87$	$6R_2 + \frac{1}{2}R_2 = 12.94$
15	XV	1	15	29.05	$14R_2 + \frac{1}{2}R_2 = 28.86$	$5R_2 + \frac{1}{2}R_2 = 10.95$
16	XVI	1	16	29.05	$15R_2 + \frac{1}{2}R_2 = 30.85$	$4R_2 + \frac{1}{2}R_2 = 8.96$
17	XVII	1	17	29.05	$16R_2 + \frac{1}{2}R_2 = 32.84$	$3R_2 + \frac{1}{2}R_2 = 6.97$
18	XVIII	1	18	29.05	$17R_2 + \frac{1}{2}R_2 = 34.83$	$2R_2 + \frac{1}{2}R_2 = 4.98$
19	XIX	1	19	29.05	$18R_2 + \frac{1}{2}R_2 = 36.82$	$R_2 + \frac{1}{2}R_2 = 2.99$
20	XX	1	20	29.05	$19R_2 + \frac{1}{2}R_3 = 38.84$	$\frac{1}{2}R_2 = 1$
	Total	20		581.00	398.04	398.04
			Average	29.05	19.90	19.90

Thus the overall average number of trees per ha above selection girth will be $29.05+19.90+19.90 = 68.85$. Out of which available for selection felling would be $29.05+19.90$. Percentage removal would be $(48.95/68.85) \times 100 = 71.10\%$. Following the guidelines of Government of India, only 50% of normal available yield can be harvested. Accordingly, the number of trees for felling on average per hectare annually (36% of 48.95) = 17.40 say 17 trees per hectare. Volume conversion factor of teak in girth class 76-90 for timber (Jodmoha range) = 0.186 m^3 . Average annual yield per hectare $(17 \times 0.186) = 3.162 \text{ m}^3$. Total average annual yield $(20963 \text{ ha} \times 3.162)/20 = 3314.25$ say 3314 m^3 .

2.6.8.2 REGULATION OF YIELD OF TEAK TREES OF SEED ORIGIN

The harvestable girth is fixed at 120 cm at breast height over bark. As the forests were repeatedly worked under CWR system previously, the crop has a considerable stock of coppice origin. For the purpose of calculating yield of seed origin teak trees, it is assumed that 35% of the teak stock is of seed origin. The details of teak trees in various girth classes are given below.

TABLE NO. 2.11: DETAILS OF TEAK STOCK, PERIOD REQUIRED BY TREES TO SWITCHOVER TO NEXT GIRTH CLASS PER HA

Class	Girth Class (cm)	Total no.of Trees per Ha, as per Enumeration Data	Total No.of Trees of Seed Origin per Ha Out of Trees in col.3	Years Required to Shift to Next Girth Class (seed origin)	Corresponding Symbol for Figures in Col.5
(1)	(2)	(3)	(4)	(5)	(6)
I	>121	2.35	0.82	0	Y_2
II	106-120	4.97	1.74	17	Y_3
III	91-105	12.05	4.22	16	Y_4
IV	76-90	25.32	8.86	12	Y_5
V	61-75	39.74	13.91	11	Y_6

Class	Girth Class (cm)	Total no.of Trees per Ha, as per Enumeration Data	Total No.of Trees of Seed Origin per Ha Out of Trees in col.3	Years Required to Shift to Next Girth Class (seed origin)	Corresponding Symbol for Figures in Col.5
(1)	(2)	(3)	(4)	(5)	(6)
VI	46-60	48.54	16.99	10	Y ₇
VII	31-45	45.32	15.86	9	Y ₈
VIII	16-30	32.55	11.39	8	Y ₉
	Total	210.84	73.79	83	Y

TABLE NO. 2.12: DETAILS OF TREES AVAILABLE IN DIFFERENT GIRTH CLASSES FOR HARVESTING PER HA

Class	Girth Class	Trees/ Ha	% of Trees Available as Class I in Future	Symbol Corresponding figures in col.4	Trees Available as Class-I in Future	Symbol for Corresponding Figures in Col.6
(1)	(2)	(3)	(4)	(5)	(6)	(7)
I	>120	0.82	0	X ₂	0	0
II	106-120	1.74	47.14 %	X ₃	0.82	S ₂
III	91-105	4.22	19.44 %	X ₄	0.82	S ₃
IV	76-90	8.86	9.25 %	X ₅	0.82	S ₄
V	61-75	13.91	5.90 %	X ₆	0.82	S ₅
VI	46-60	16.99	4.83 %	X ₇	0.82	S ₆
VII	31-45	15.86	5.17 %	X ₈	0.82	S ₇
VIII	15-30	11.39	7.20 %	X ₉	0.82	S ₈
	Total	73.79		X	5.74	S

TABLE NO. 2.13: DETAILS OF TEAK TREES- ANNUAL RECRUITMENT TO NEXT GIRTH CLASS PER HA

Class	Girth Class in cm	No of trees / ha	Years in class	Symbol	Annual recruitment to next class	Symbol
(1)	(2)	(3)	(4)	(5)	(6)	(7)
I	>121	0.82	0			
II	106-120	1.74	17	Y_2	0.048	R_2
III	91-105	4.22	16	Y_3	0.051	R_3
IV	76-90	8.86	12	Y_4	0.068	R_4
V	61-75	13.91	11	Y_5	0.075	R_5
VI	46-60	16.99	10	Y_6	0.082	R_6
VII	31-45	15.86	9	Y_7	0.091	R_7
VIII	15-30	11.39	8	Y_8	0.103	R_8
	Total	73.79	83	Y	0.069	R

TABLE NO. 2.14: CALCULATION OF YIELD FOR 20 YEARFELLING CYCLE

Sr. No.	Coupe No.	For coupe area in ha	Nth year of operation	Class I at hand= S_1	Realizable Recruitment =	Accruing Recruitment=
					$(n-\frac{1}{2}) R_2$	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	I	1	1	0.82	$\frac{1}{2}R_2 = 0.011$	$19R_2 + \frac{1}{2} R_2 = 0.429$
2	II	1	2	0.82	$R_2 + \frac{1}{2} R_2 = 0.033$	$18R_2 + \frac{1}{2} R_2 = 0.407$
3	III	1	3	0.82	$2R_2 + \frac{1}{2} R_2 = 0.055$	$17R_2 + \frac{1}{2} R_2 = 0.385$
4	IV	1	4	0.82	$3R_2 + \frac{1}{2} R_2 = 0.077$	$16R_2 + \frac{1}{2} R_2 = 0.363$
5	V	1	5	0.82	$4R_2 + \frac{1}{2} R_2 = 0.099$	$15R_2 + \frac{1}{2} R_2 = 0.341$
6	VI	1	6	0.82	$5R_2 + \frac{1}{2} R_2 = 0.121$	$14R_2 + \frac{1}{2} R_2 = 0.319$
7	VII	1	7	0.82	$6R_2 + \frac{1}{2} R_2 = 0.143$	$13R_2 + \frac{1}{2} R_2 = 0.297$
8	VIII	1	8	0.82	$7R_2 + \frac{1}{2} R_2 = 0.165$	$12R_2 + \frac{1}{2} R_2 = 0.275$
9	IX	1	9	0.82	$8R_2 + \frac{1}{2} R_2 = 0.187$	$11R_2 + \frac{1}{2} R_2 = 0.253$

Sr. No.	Coupe No.	For coupe area in ha	Nth year of operation	Class I at hand= S_1	Realizable Recruitment =	Accruing Recruitment=
					$(n-\frac{1}{2}) R_2$	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
10	X	1	10	0.82	$9R_2 + \frac{1}{2} R_2 = 0.209$	$10R_2 + \frac{1}{2} R_2 = 0.231$
11	XI	1	11	0.82	$10R_2 + \frac{1}{2} R_2 = 0.231$	$9R_2 + \frac{1}{2} R_2 = 0.209$
12	XII	1	12	0.82	$11R_2 + \frac{1}{2} R_2 = 0.253$	$8R_2 + \frac{1}{2} R_2 = 0.187$
13	XIII	1	13	0.82	$12R_2 + \frac{1}{2} R_2 = 0.275$	$7R_2 + \frac{1}{2} R_2 = 0.165$
14	XIV	1	14	0.82	$13R_2 + \frac{1}{2} R_2 = 0.297$	$6R_2 + \frac{1}{2} R_2 = 0.143$
15	XV	1	15	0.82	$14R_2 + \frac{1}{2} R_2 = 0.319$	$5R_2 + \frac{1}{2} R_2 = 0.121$
16	XVI	1	16	0.82	$15R_2 + \frac{1}{2} R_2 = 0.341$	$4R_2 + \frac{1}{2} R_2 = 0.099$
17	XVII	1	17	0.82	$16R_2 + \frac{1}{2} R_2 = 0.363$	$3R_2 + \frac{1}{2} R_2 = 0.077$
18	XVIII	1	18	0.82	$17R_2 + \frac{1}{2} R_2 = 0.385$	$2R_2 + \frac{1}{2} R_2 = 0.055$
19	XIX	1	19	0.82	$18R_2 + \frac{1}{2} R_2 = 0.407$	$R_2 + \frac{1}{2} R_2 = 0.033$
20	XX	1	20	0.82	$19R_2 + \frac{1}{2} R_3 = 0.429$	$\frac{1}{2} R_2 = 0.0115$
	Total	20		16.40	9.60	9.60
			Average	0.82	0.48	0.48

Average no. of trees per ha above harvestable girth of 120 cm = $0.82 + 0.48 + 0.48 = 1.78$

Average no. of trees available for selection felling per ha = $0.82 + 0.48 = 1.30$

Percentage removal = $1.30 \times 100 / 1.78 = 73.03\%$

Following the guidelines of GOI for removal of 50% of normal yield, the average annual yield (number of trees) per ha = 36.51% of $0.98 = 0.47$ trees per ha

Volume conversion factor of teak for girth class 121-135 (Jodmoha range) = 0.471 m^3

Average annual yield (volume) per ha = $0.47 \times 0.471 = 0.221 \text{ m}^3$

Total average annual yield for area under SCI WC (assuming 50% workable D Area) = $(20,963 \text{ ha} \times 0.221 / 20) = 231.64 \text{ m}^3$

Abstract of yield calculation is given below

TABLE NO. 2.15: EXPECTED YIELD

Unit	Yield expected (m ³)		
	Coppice trees	Seed origin Trees	Total
(1)	(2)	(3)	(4)
Per Ha.	3.16	0.22	3.38
Per coupe (80 ha)	252.96	17.68	270.64
Annual average	3314.25	231.64	3545.89

2.6.9 : TABLE OF FELLING :The abstract of the table of felling is shown in **Appendix No.XXI**



2.6.10 METHOD OF EXECUTING THE FELLING

2.6.10.1: AGENCY OF HARVESTING:Demarcation of coupes and marking of trees for felling will be carried out by the department to meet silvicultural and technical requirements. Felling of trees, logging and haulage of the felled material will be carried out either by department or by Forest Labour Co-operative Society (FLCS) as per the existing Government directives. Silvicultural operations like cut-back operation, cleaning, thinning etc. and other regeneration activities after main felling of the coupes will be carried out by the Forest department.

2.6.10.2: DEMARCATION: The main annual coupes due for felling will be demarcated one year in advance except coupe number two due for working in which demarcation and marking will be carried out in the same year of working. Demarcation and marking will be carried out as per the prescriptions in miscellaneous regulations. The coupes will be divided into sections for effective control over various operations like felling, extraction and other treatments. Each section shall not exceed more than 20 ha.

2.6.10.3: PREPARATION OF TREATMENT MAP:After demarcation of the coupes, a treatment map shall be prepared by the RFO and it will be verified by the ACF emphasizing the areas of promising natural regeneration, site suitable for

plantation and the area which need soil and moisture conservation works. The treatment map shall be approved by the DCF after having detailed discussion with concerned RFO and ACF and field inspection. The treatment map shall be prepared with proper care and all the features must be shown on the treatment map.

The treatment map shall indicate the following sections:

1. **Type A- Protection Area:** It shall include the following:
 - i. Areas with steep slopes i.e. more than 25%.
 - ii. 20 m wide strip on either side of perennial water courses (water courses in which water remains till month of December).
 - iii. Eroded or liable to erosion areas.
 - iv. The area which directly drain into water reservoirs of the irrigation or drinking water projects.
2. **Type B - Under stocked area:** This includes area with crop density less than 0.4 or total blank areas and the area shall not be less than 2 ha in extent at one place. Under stocked areas can be categorised into 2 types:
 - i. B1-type: Open forests (density < 0.4) with natural regeneration.
 - ii. B2-type: Open forests (density < 0.4) without natural regeneration.
3. **Type C - Areas of old plantations and pole crop:** This category includes the patches of pole crop and natural regeneration suitable for retention as future crop of both teak and miscellaneous patches. It also includes old plantations, the extent of which shall be minimum one ha at one place.
4. **Type D - Well stocked areas:** The areas having crop density more than 0.4 shall be considered as well stocked areas.

Coupe area and enumeration: Treatment maps shall be prepared on graph paper in 1:5000 scale. Laying of grids shall be done after demarcation of A, B, C and D type areas. Grids of one hectare shall be laid down. Grids shall be laid down using GIS software such as q-GIS. Grid wise record of enumeration, marking and felling shall be maintained. In the remarks column of marking register, reasons for marking such as

mature, teak trees of coppice origin or seed origin, dead, malformed, live high stump, etc. will be recorded. Enumeration of all trees above 15 cm above GBH shall be carried out in D type areas. With respect to teak trees enumeration, the details of seed origin or coppice origin shall be recorded in D type areas. Grid wise details shall be maintained for enumeration.

Treatment: Different types of treatments are prescribed and adopted for these categories of areas are as under:

1. Type A: No felling is prescribed. Harvesting of standing trees (dead or alive) is prohibited in A type areas. Appropriate soil and moisture conservation measures shall be carried out.

2. Type B: Treatments recommended for B-type areas: Preference shall be given to natural regeneration and proper treatment will be given to the crop considering the existence of seedlings or rootstock in the areas. Identification of important valuable seedlings of seed and coppice origin shoots is essential. Seed based natural regeneration should be marked with red band and seedlings raised from coppice shoots should be marked with yellow band. ACF and RFO shall ensure proper identification. Model estimate for three years for tending of natural regeneration and coppice shoots shall be prepared and approved by competent authority. Plantation register will be maintained in the lines of AR areas. All such sites selected for tending of natural regeneration including rootstock and coppice management shall be geo-referenced on digital maps in the division by taking GPS readings of each grid. These grids may be compared later with satellite imagery of the division for any change in the vegetation cover. A proper record in the form of natural regeneration register should be maintained at the range level and division level regarding all activities of regeneration. Records such as register, number of seedlings identified, cleaned saplings, maps, GPS readings, operations, photographs etc. shall be maintained on a regular basis. All entries should be made in the relevant coupe control forms and compartment history forms. Tending of natural regeneration of valuable species in the B-type will be carried out as follows:

A. Natural regeneration management in B1-type Areas

Following treatments are prescribed for B1-type areas:

Tending of Natural Regeneration (of Seed Origin):All seedlings and saplings (of seed origin) of valuable species, more than 60 cm. in height, will be nursed as future crop. Spacing operations, if required, will be carried out to leave nearly 400 saplings per hectare at an average of 5 metre spacing. Spacing out operation will be in favour of valuable species and species rarely found in the area. Natural regeneration shall be assisted and encouraged by soil working and mulching around them, in the following manner.

a) First Year Operations:Weeds in one-meter diameter around saplings of valuable species shall be cleared during the first week of July. Uprooted weeds, grasses and leaf-litter shall be mixed in the upper layer of soil as the organic mulch and facilitate loosening and aeration of the soil by worms and insects. One soil working shall be carried out in October.

b) Second Year Operations:The soil working in October shall be repeated in the following year. However, one scrap weeding of one-meter diameter shall be carried out in the first week of August around the shoots of seedling coppice within the rootstock management area.

c) Third Year Operations:Singling of coppice shoots, management of damaged and malformed saplings, climber cutting and shrub clearance shall be repeated as third year operations.

Singling of Coppice Shoots: 1 to 2 healthy and promising coppice shoot shall be retained on the stumps and the rest will be removed. Such coppice shoots should also be close enough to the ground so that it will not topple after gaining volume and weight and would be able to subsequently develop root system of its own. However, coppice shoots interfering with promising saplings of seed origin or coppice of valuable species shall be removed.

Coppice Management of Damaged and Malformed Saplings: The saplings and poles of up to 45 cm GBH having one third of the stem damaged and malformed shall be coppiced by cutting flush to the ground. Such coppicing, however, should not expose the ground, causing erosion and leading to soil loss. Poles having at least 2.50 meter of clean bole will not be treated as malformed.

B. Artificial Regeneration in B2-Type Areas: Plantations will not be taken up in SCI areas unless a minimum of 5 hectares of clear open patch fit for plantation is available in an annual coupe. The choice of species will be decided as per the site. Teak and native species should be given preference in the plantation. Stump planting of Teak should be taken only in well drained areas with clear open patches.

C. Soil and Moisture Conservation Works: Required soil and moisture conservation works will be carried out as per site requirement. Prescription's in Miscellaneous Regulations Chapter will be followed.

3. Type C: No plantation will be done in these areas. Thinning shall be done in the young pole crop as per the stand table. Marking rules have been mentioned subsequently.

4. Type D: No Plantation will be done in these areas. Felling will be carried out as prescribed under marking rules.

2.6.10.4 MARKING TECHNIQUES

Marking will be done under close supervision of ACF with guidance of DCF concerned. The DCF will inspect as many coupes as possible and impart proper guidance and instruct the staff so as to avoid any deviations of the prescription of the treatment.

Marking will be done along with the work of coupe demarcation, one year in advance of the main felling.

Marking technique and prescriptions described in the chapter of the Miscellaneous Regulations shall be followed, with required modifications described in the following paragraphs.

- i. Marking shall be carried out under the close supervision of the RFO and under guidance of ACF concerned. DCF shall inspect the coupes to ensure proper marking and to guard against excessive marking, if any.
- ii. The following rules shall be observed strictly for marking in different types of areas.

Type A: No tree shall be marked for felling.

Type B:

1. All dead and diseased trees shall be marked, retaining 2 dead trees/ha as snags and dens.
2. All live high stumps shall be marked and cut close to the ground.
3. Malformed seedlings shall be cut back. All multiple coppice shoots, retaining one promising shoot, shall be marked.

Type C:

1. All dead, diseased and malformed trees shall be marked.
2. Multiple shoots shall be reduced to 1 per stool retaining the vigorous one.
3. Young poles will be marked for thinning to remove congestion. The spacing between two adjacent poles shall be approximately equal to $\frac{1}{3}^{\text{rd}}$ of the crop height and/or to bring down stem number as per the yield table.
4. Thinning shall be carried out on the silvicultural principles with the help of stand table. The following prescriptions should also be followed for thinning operations.
 - a. Age and site quality of crop shall be ascertained.

- b. Wedge Prism of suitable factor (generally for young crop, middle aged crop, prism with factor one is convenient) shall be used and basal area per ha of crop is obtained by averaging 3 or 4 counts at various representative sites.
 - c. The basal area as obtained above shall be compared with basal area given in the stand table and if the basal area is more than that of given in stand table for corresponding age and site quality, the crop is suitable for thinning.
 - d. The additional basal area is required to be removed from those girth classes which are having more number of trees as compared to the stand table.
 - e. Care should be taken to remove the poles of coppice origin first while retaining the poles of seedling origin.
5. Unwanted undergrowth interfering or likely to interfere with the seed based natural regeneration of Teak and other valuable species shall be removed.

Type D:

- 1. The marking for felling shall be carried out as per the marking rules.
- 2. No miscellaneous species including fruit and NTFP shall be marked.
- 3. All the climbers except those of NTFP values shall be cut.
- 4. Multiple coppice shoots or poles shall be marked to reduce them to one per stool retaining the most vigorous one.
- 5. All dead and malformed trees shall be marked for felling leaving 2 dead trees per ha for wildlife. A tree shall be considered as malformed if it does not have clear standing bole exceeding 2.5 metres from ground level. Malformed trees having clear straight bole exceeding 2.5 metres height from ground shall not be marked for felling.

6. The silviculturally available teak trees of coppice origin with harvestable girth of 75 cm at GBH and above shall be marked for felling.
7. A tree is considered silviculturally available when
 - (a) Removal will not lead to soil erosion;
 - (b) Removal shall create appropriate gap for improvement of young seedlings
 - (c) Alternate trees for seed source is available.
8. The silviculturally available teak trees of seed origin with harvestable girth of 120 cm at GBH and above shall be marked for felling.
9. The felling of teak trees shall be from highest girth class to the next lower girth class.
10. The undesirable undergrowth which is preventing or likely to prevent the establishment and growth of seedling regeneration of the desired species will be removed.

Verification of Marking:

- (i) RFO shall carry out marking and shall also certify the marking abstract.
- (ii) ACF concerned shall verify 20% of the marking work. He shall inspect all the coupes to verify marking and shall record his findings and give corrective written instructions.
- (iii) DCF shall inspect 10% of the coupes to verify marking and take corrective measures.
- (iv) CF (T) shall check 2% coupe marking work randomly.

2.6.10.5 SOIL AND MOISTURE CONSERVATION WORKS

The forests of Yavatmal Division suffered from frequent fires, heavy biotic pressure and excessive cattle movement resulting in compaction of soil, poor soil aeration and poor drainage. These soil conditions are not conducive to establish

regeneration. All soil and moisture conservation works shall be carried out on watershed basis. The soil and moisture conservation works shall be taken up along with marking operation and completed before onset of monsoon. The soil and moisture conservation works are to be based on the requirement of site. These works will be taken up after preparation of a detailed treatment map of the area and model of soil and moisture conservation measures duly sanctioned by the competent authority. To bring about conducive site conditions for establishment of seedlings, the soil and moisture conservation like contour trenches, nala bunding, cement plugs etc. can be taken up.

Prescriptions listed in 'Miscellaneous Regulations' Chapter shall be followed for soil and moisture conservation works.

2.6.11 SUBSIDIARY SILVICULTURAL OPERATIONS

CBO: The cut back operations shall be carried out one year after the main felling of the coupes. The following prescriptions are given to carry out these operations.

1. The badly damaged trees during the main felling shall be felled.
2. Cutting of the climbers except those of known medicinal or NTFP value.
3. All left over established multiple coppice shoots and the poles shall be reduced to one per stool.
4. Newly raising multiple teak coppice shoots will be reduced to two per stool retaining the most promising ones.
5. The trees marked for felling but left out during the main felling shall be felled.

Cleaning: It shall be carried out during the 6th year of the main felling as per the following prescriptions.

1. Climbers cutting shall be undertaken except those known for medicinal and NTFP value.

2. Multiple coppice shoots shall be reduced to one or removed if found interfering with the establishment of natural regeneration.
3. The established natural regeneration of teak shall be thinned for appropriate space.
4. All the inferior species including undesirable undergrowth interfering or likely to interfere with growth and development of seedling of teak and other valuable species (Including medicinal and NTFP) shall be cut back.

2.6.12 REGENERATION

Natural Regeneration: The young regeneration of seed origin are noticed in patches of both teak and miscellaneous species and usually die before getting established due to edaphic conditions resulted due to excess biotic pressure and recurrent fires.

To increase the development and establishment of natural regeneration and to induce the natural regeneration, the prescriptions given below shall be followed.

1. The areas with promising natural regeneration shall be identified inside the coupe.
2. The undesirable undergrowth which is preventing or likely to hinder the establishment and development of regeneration of seed origin of the desired species shall be removed.
3. The identification patches of natural regeneration shall be rigidly protected from fire, grazing and other biotic interference.
4. The coppice shoots of both teak and miscellaneous species interfering with the young seedlings shall be removed.
5. The young seedlings shall be treated with soil working and soil mulching in each year in first three years after main felling. The soil and moisture conservation works shall be taken up in such identified patches if needed.

6. The natural regeneration should be cleared of weeds within the diameter of one meter and these weeds, grasses, leaf litter, leaves, twigs and branches will be spread in a 15 cm. high layer all around the seedlings within the cleared area so that it will act as organic mulch. 2 or 3 spade full of soil to each plant shall be added over it to keep it in place. So that it will keep the soil around the plants free from weeds as well as helping proper aeration of the soil by worms and insects. Apart from this, mulching small stones around the current year seedlings shall be arranged in the areas where stones are available.

Artificial Regeneration and Choice of Species

Supplemented with natural regeneration, artificial regeneration is prescribed as per the site requirement. The choice of species shall be based on site conditions. In this context it is preferred to select the species of indigenous, naturally occurring and of proven fodder, fruit, non-wood forest produce. The species shall be selected in consultation with local people or the members of JFMC. Some of indigenous and preferred species are Arjun, Dhawda, Bel, Behada, Bamboo, Chinch, Jamun, Apta, Anjan, Biba, Hirda, Kulu, Shivan, Tiwas, Ber, Amba etc. In general, in the plantations 50% teak and 50% miscellaneous species shall be raised. Bamboo can be planted along the streams. The seedlings so raised from source of seed origin preferably obtained from known source especially from plus trees of high forests.

Method of Planting: In the areas of plantation the spacing may be 2 x 2 mtr. For planting teak stumps alignment and stocking will be carried out and stumps will be planted. For root trainer teak seedlings, pit size of 30 x 30 x 30 cms will be used for planting. Saplings of miscellaneous species will be planted in pits of size of 45 x 45 x 45cm.

Weeding and Casualty Replacement: Three weedings are prescribed in 1st year, two weedings in 2nd year and one weeding in 3rd year. Casualty replacement, if necessary, shall be carried out in 1st and 2nd year to the extent of 20%. Soil working shall be undertaken in October in the first and second year.

While digging pits, care should be taken not to dig them in the shadow of standing tree or 2 meter of existing established seedlings. The standing trees are having influence zone of spreading shadow and pits should not dig either in the shadow or in the influence zone of a standing tree. Influence zone for various size trees may be taken as given in the table below:

TABLE NO. 2.16: TABLE SHOWING THE ZONE OF INFLUENCE

Sr. No.	Girth Class (Cm)	Influence Zone (m)
(1)	(2)	(3)
1	<30	2
2	30-60	3
3	60-90	4
4	90-120	5
5	>120	6

2.6.13: ASSOCIATED REGULATIONS AND MEASURES:

Fire Protection:

The main felling coupes shall be fire traced and rigidly protected from fire for a period of 5 years. The fire tracing activities shall be completed by mid-February to avoid fire hazards to standing crop as well as to the natural regeneration. Effective protection against fire shall be undertaken for a period between mid-February to mid-June to ensure survival and establishment of natural regeneration of all species for developing it into the future growing stock.

Grazing:

The coupe of main felling will be closed to grazing till cleaning operations in the 6th year.

CHAPTER-3

IMPROVEMENT WORKING CIRCLE

3.1 IMPROVEMENTWORKING CIRCLE (CLEARLY MARKED ON GIS BASED MAPS OF SCALE1:50000) – The said map is annexed in this chapter.

3.2 GENERAL CONSTITUTION OF THE WORKING CIRCLE

The area has potential to improve and yield large size commercial timber of Teak on a sustained basis in future, if improved through silvicultural operations and artificial regeneration. The area is mostly under-stocked but contains sizable patches of well stocked forests. The forest contains a preponderance of malformed tree growth having average forest cover density between 0.3 to 0.5. The main aim is to improve the status of the crop and land. Therefore obtaining produce of any kind is neither expected nor regulated. However, through silvicultural operations such as singling and cutting back, poles and firewood will be obtained.

This Working Circle is expected to serve as a transition to SCI. Forest areas capable of producing medium to large-sized timber but not considered fit for harvesting due to the preponderance of young to middle aged crop has been included in this Working Circle.

The range wise distribution of area under this Working Circle is given as follows:

TABLE NO. 3.1 RANGE WISE DISTRIBUTION OF AREA UNDER IWC WORKING CIRCLE

Sr. No.	Range	Total Area of Range (Ha)	No. of Compt.	Area allotted (ha)				% to the Area of Range (8/3*100)	% to the Area of WC
				RF	PF	UF	Total Area		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Yavatmal	8902.41	16	1882.87	10.85	0.00	1893.72	21.27	17.25
2	Hiwari	11536.44	7	935.31	0.00	0.00	935.31	8.11	8.52
3	Wadgaon	7360.99	10	434.48	0.00	0.00	434.48	5.90	3.96
4	Jodmoha	13370.86	17	1618.75	3.51	0.00	1622.26	12.13	14.78
5	Ner	7180.06	3	693.25	0.00	0.00	693.25	9.66	6.32

Sr. No.	Range	Total Area of Range (Ha)	No. of Compt.	Area allotted (ha)				% to the Area of Range (8/3*100)	% to the Area of WC
				RF	PF	UF	Total Area		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
6	Darwha	15233.90	1	2043.53	0.00	0.00	2043.53	13.41	18.62
7	North Arni	10777.78	18	3237.12	0.00	0.00	3237.12	30.04	29.50
8	South Arni	9172.17	30	115.33	0.00	0.00	115.33	1.26	1.05
Total		83534.61	88	10960.64	14.36	0.00	10975.00	13.14	100.00

3.3 GENERAL CHARACTERISTICS OF VEGETATION

The forests are inferior both in quality and composition of valuable species. Prevalent Site Quality is IV. Some dense patches are also interspersed. Strips of forests mostly along water courses also have better density. Number of open patches and scrubby growth are common. Due to proximity to human habitation, the biotic pressure is heavy. Teak is the principle species, which covers 70% of the stock, with others being Ain, Mahua, Dhawada, Palash, Hiwar, Kalamb, Dudhi, Khair, Neem, Bel, Tendu, etc. Age of the crop ranges from young to middle.

Unsound trees are common. The area in general supports the poor coppice crop of stunted teak trees which are largely malformed and crooked. Natural regeneration of all species is patchy and poor. Due to biotic pressure, establishment of seedlings is hampered.

3.4 FELLING SERIES, CUTTING SECTIONS AND JFM AREAS

The total number of felling series has been determined for the area allocated to the Improvement Working Circle, taking into account the enumeration and silvicultural requirements. The aim is to maintain consistency with the felling series created in the previous working plan. In the current plan, six felling series have been established, with each series consisting of 20 coupes numbered in Roman numerals from I to XX.

For comprehensive details regarding the felling series, compartments organized by felling series, and specific area information for each coupe, please refer to **Appendix No.XXIII(B)** in Volume-II.



3.5 BLOCKS, COMPARTMENTS AND JFM AREA (MARKED ON GIS BASED MAPS)

A total of 10975 ha with 74 compartments are allotted to this working circle. No block formation has been segregated for exclusive management of forests under this Working Circle. The distribution of the compartments allotted to this Working Circle has been given as under.

TABLE NO.3.2: COMPARTMENTS ALLOTTED TO IMPROVEMENT WORKING CIRCLE

Sr. No.	Felling Series	Range	Compartments Alloted	Rangewise Allotment of Felling Series Area (ha)	Total Area of the Felling Series (ha)
(1)	(2)	(3)	(4)	(5)	(6)
1	Jambhulni	Darwha	69, 322, 548	254.00	1865.62
2	Jambhulni	Jodmoha	E631, E632, E633, E635	329.50	
3	Jambhulni	North Arni	9, 314, 317	682.00	
4	Jambhulni	Yavatmal	415, 541, 551	600.12	
5	Karalgaon	Darwha	529	34.72	1870.80
6	Karalgaon	Jodmoha	342, 359, 554, 576, 577, E626, E627, E628, E629, E630, E634	1059.00	
7	Karalgaon	Yavatmal	464, 485, 486, 487, 517, 570, 574	777.08	
8	Karegaon	Darwha	60, 61	677.99	1805.30
9	Karegaon	Hiwari	305	283.28	
10	Karegaon	North Arni	34, 255, 265	844.03	
11	Masola	Darwha	77	229.47	1799.50
12	Masola	Jodmoha	370, 371	233.76	
13	Masola	Ner	403, 404, 405	693.25	

Sr. No.	Felling Series	Range	Compartments Alloted	Rangewise Allotment of Felling Series Area (ha)	Total Area of the Felling Series (ha)
(1)	(2)	(3)	(4)	(5)	(6)
14	Masola	North Arni	11	361.40	
15	Masola	Yavatmal	357	281.62	
16	Saykheda	Darwha	98, 299	327.55	1812.03
17	Saykheda	Hiwari	254, 284	534.00	
18	Saykheda	North Arni	263	350.83	
19	Saykheda	Wadgaon	209, 328, 213A, 298A, 298B, 334A, 334B, 335A, 504A, E648	434.48	
20	Saykheda	Yavatmal	476, 482	165.17	
21	Shiwar	Darwha	75, 76, 188, 542, 543, 544, 545, 546, 547	519.80	1821.75
22	Shiwar	Hiwari	286, 514, 583, 584	118.03	
23	Shiwar	North Arni	10, 19, 33, 316, 566, E641	998.86	
24	Shiwar	South Arni	35, E643, E644	115.33	
25	Shiwar	Yavatmal	532, 540, 591	69.73	
Grand Total				10975.00	10975

3.6 SPECIAL OBJECTIVES OF MANAGEMENT

The forests allotted to this working circle are degraded in quality. Due to various adverse factors which resulted in maltreatment of the forest in the past, these are not in normal state. And currently, the crop is generally young to middle aged. Therefore the prime object of management will be to prepare crop to be managed under SCI in future. Thus the special objects of management of this area are:

1. To improve the crop and bring normalcy as soon as possible
2. To check the soil erosion and conserve soil and moisture
3. To restore the quality and density of the forests.

3.6.1 ANALYSIS AND VALUATION OF THE CROP

Enumeration results for IWC are analysed and the abstract is given in the following tables:

TABLE NO.3.3: GIRTH CLASS-WISE GROWING STOCK (TREES/HA.) IN IWC

Girth Class (cm)	Teak			Others			Total	
	No.	% w.r.t. Total Teak Spp.	% w.r.t. Total Stock.	No.	% w.r.t. Total Misc. Spp.	% w.r.t. Total Stock.	No.	% w.r.t. Total Stock
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
15-30	43	19.81	13.05	32	28.43	9.71	75	22.75
31-45	60	27.52	18.13	35	31.08	10.61	95	28.74
46-60	55	25.37	16.71	24	20.91	7.14	79	23.85
61-75	34	15.40	10.14	6	5.60	1.91	40	12.05
76-90	15	6.83	4.50	7	5.86	2.00	21	6.50
91-105	7	3.17	2.09	4	3.51	1.20	11	3.28
106-120	3	1.31	0.86	2	2.18	0.74	5	1.61
121-135	1	0.47	0.31	1	1.28	0.44	2	0.74
136-150	0	0.20	0.13	1	0.64	0.22	1	0.35
>151	0	0.11	0.07	1	0.55	0.19	1	0.26
	218	100.00	65.98	113	100.00	34.15	331	100

TABLE NO.3.4 :SPECIES-WISE GROWING STOCK (TREES/HA.) IN IWC

Group/ Species	Girth Class wise Classification in cms										
	15-30	31-45	46-60	61-75	76-90	91-105	106-120	121-135	136-150	Above 150	Total
Group A :- Species of General Utility											
Ain	1.84	1.4	1.21	0.24	0.1	0.29	0.24	0.15	0.05	0.05	5.56
Lendia	2.8	2.75	1.11	0.58	0.39	0.15	0.24	0	0	0.05	8.07
Teak	43.19	60	55.31	33.58	14.88	6.91	2.85	1.01	0.44	0.24	218.41
Total	47.83	64.16	57.63	34.4	15.36	7.34	3.33	1.16	0.48	0.34	232.03

Group/ Species	Girth Class wise Classification in cms										
	15- 30	31- 45	46- 60	61- 75	76- 90	91- 105	106- 120	121- 135	136- 150	Above 150	Total
Group B :- Species of Special Utility											
Arjun	0	0	0	0	0	0	0	0.05	0	0	0.05
Dhawada	1.55	3.67	2.17	0.48	1.98	0.92	0.15	0.05	0.19	0.1	11.26
Garadi	0.15	0.77	0.1	0	0	0	0	0	0	0	1.02
Hiwar	0.73	0.39	1.21	0.05	0.1	0	0	0	0.05	0	2.51
Kalamb	0	0.05	0.05	0	0.58	0.63	0.44	0.29	0	0	2.03
Khair	0	0	0.05	0	0.05	0	0	0	0	0	0.1
Moin	0	0.05	0.29	0.1	0.15	0.19	0.1	0.1	0.1	0.19	1.26
Salai	0	0.05	0.05	0.05	0.15	0.24	0.24	0.15	0.15	0	1.06
Total	2.42	4.98	3.91	0.68	3	1.98	0.92	0.63	0.48	0.29	19.28
Group C :- Species of Minor Forest Produce											
Apta	0.15	0.29	0.15	0.05	0	0	0	0	0	0	0.63
Behada	0.05	0.05	0.1	0	0.05	0	0.05	0	0	0	0.29
Bel	0.1	0	0	0	0	0.1	0	0	0	0	0.19
Char	0	0.15	0	0	0	0	0	0	0	0	0.15
Charoli	0	0.05	0	0	0	0	0.05	0	0	0	0.1
chinch	0	0	0	0	0	0	0	0	0	0.05	0.05
Moha	0	0	0	0	0.1	0	0.15	0.19	0.05	0	0.48
Neem	0.1	0.34	0.34	0.1	0.15	0	0.05	0.05	0.05	0	1.16
Tendu	4.64	2.71	1.06	0.05	0.34	0.29	0.05	0.05	0	0	9.18
Palas	14.98	16.52	11.3	3.29	1.45	0.53	0.34	0.05	0.05	0	48.5
Total	20	20.1	12.95	3.48	2.08	0.92	0.68	0.34	0.14	0.05	60.72
Group D :- Other Species											
Anjan	0	0	0	0	0.05	0.1	0	0	0	0	0.15
Babhul	0.1	0.15	0.29	0	0	0	0	0	0	0	0.53
Bahawa	2.03	1.06	0.19	0.05	0	0.05	0	0	0	0	3.38
Bharati	0	0.1	0	0	0	0	0	0	0	0	0.1
Bhingari	0	0	0	0	0	0.05	0.05	0	0	0.05	0.14
Bhosa	0.05	0	0	0	0	0	0	0	0	0	0.05
Dudhi	2.8	4.4	3.43	1.11	0.53	0.19	0.19	0.1	0	0	12.75
Haladbera	0	0.05	0.15	0	0.1	0	0	0	0	0	0.29

Group/ Species	Girth Class wise Classification in cms										
	15-30	31-45	46-60	61-75	76-90	91-105	106-120	121-135	136-150	Above 150	Total
Karu	0	0	0.1	0	0.05	0	0	0	0	0.05	0.19
Katbor	0.05	0	0	0	0	0	0	0	0	0	0.05
Katsawar	0	0	0	0.05	0	0	0	0	0	0	0.05
Lokhandi	0	0	0	0.05	0	0	0	0	0	0	0.05
Medsing	0	0	0.15	0	0.15	0.24	0.1	0.24	0.05	0.05	0.97
Sisoo	0	0	0.05	0	0.1	0	0	0	0	0	0.15
Shembdi	0	0	0	0.05	0	0	0	0	0	0	0.05
Other	0.05	0.15	0.1	0.05	0.1	0	0.05	0	0	0.05	0.53
Total	5.07	5.89	4.45	1.35	1.06	0.63	0.39	0.34	0.05	0.19	19.42
GRAND TOTAL											
Tree/ha	75.32	95.12	78.94	39.9	21.5	10.87	5.31	2.46	1.16	0.87	331.45
Vol/ha	2.96	3.73	8.98	8.84	7.92	6.02	3.71	2.33	1.53	0.9	46.91

Regeneration:

Data on regeneration status was collected along with enumeration of the crop. The seedlings were enumerated in the following three categories as R1 upto 1 m height, R2 with 1 to 3 m height and R3 above 3 m height. The data is analysed and used to devise prescriptions for natural and artificial regeneration of forest areas. The status of natural regeneration in IWC areas is fair. The total number of seedlings is 206/ha. The table of regeneration is given below:

TABLE NO. 3.5: REGENERATION STATUS IN IWC

Sr. No.	Range	No. of Sample Plots	No of Seedlings/Ha			Total
			R1	R2	R3	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	North Arni	84	81	39	30	151
2	Yavatmal	19	164	82	73	319
3	Wadgaon	2	100	115	10	225

Sr. No.	Range	No. of Sample Plots	No of Seedlings/Ha			Total
			R1	R2	R3	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
4	South Arni	7	171	40	40	323
5	Ner	16	1	1	58	60
6	Jodmoha	8	0	0	0	0
7	Hiwari	38	200	108	84	393
8	Darwha	34	54	58	80	192
Weighted Average			100	55	49	206

3.6.2 SILVICULTURAL SYSTEM

Based on the special objectives of management and general condition of the crop, the most suitable silvicultural system is to have improvement felling, supplemented by planting and tending of the crop.

3.6.3 ROTATION PERIOD

The Rotation period is as per standard silvicultural practices of major species

3.6.4 HARVESTABLE DIAMETERS: Not applicable

3.6.5 REDUCING FACTORS AND REDUCED AREAS: Not applicable

3.6.6 FELLING CYCLE: 20 years.

3.6.7 DIVISION IN TO PERIODS AND ALLOTMENT TO PERIODIC BLOCKS: Not Applicable

3.6.8 CALCULATION OF THE YIELD

As the felling prescribed in this Working Circle is only improvement felling, no yield calculation has been prescribed.

3.6.9 TABLE OF FELLING

The Table of felling is given in **Appendix No. XXI** of Volume II



3.6.10 METHOD OF EXECUTING THE FELLING

Demarcation of coupe and marking of trees for felling will be carried out departmentally to meet the silvicultural and technical requirement. Felling of trees and haulage of the felled material will be worked as per the directives issued by the Government. But cut back operations and other regeneration activities will be done departmentally. Felling shall be carried out as per the rules prescribed in the plan. It should be done by the department. However, protection and plantation works may be done as per the Government guidelines under Joint Forest Management and duly sanctioned Micro Plans. Micro Plan prescriptions should be in consonance with the silvicultural prescriptions given in this plan.

3.6.10.2 DEMARCATION OF COUPES, PREPARATION OF TREATMENT MAPS AND MARKING TECHNIQUES

DEMARCATION:

Except for IInd coupe in the sequence of working of this plan period, coupes will be demarcated one year in advance of the main felling as given in the chapter XII, Miscellaneous Regulations of the plan. But IInd coupe will be demarcated in the first year of operation and main felling work will be done in the same year whereas, in other coupes, felling will be in the following year. Details are provided in **Appendices No. XXIII (A) and XXIII (B)** of Volume-II.



PREPARATION OF TREATMENT MAP

After demarcation of coupe is over, Range Forest Officer will inspect the area and will prepare a treatment map for the same and it shall be verified by the Assistant Conservator of Forests after thorough inspection of the area. The treatment map thus prepared will be submitted to the Deputy Conservator of Forests in charge of division, who after sample checking shall give sanction to it. The treatment maps shall show the following areas:

Type A - Protection Areas

It will include areas having steep slopes i.e. more than 25°, eroded areas or areas liable to erosion, 20 meter wide strip on either side of water courses, riparian zones and sacred groves.

Type B - Understocked Areas

It will include the areas having less than 0.4 density, including barren lands and natural banks.

Type C - Groups of Young Poles

It includes patches of well-grown pole crop of Teak and other species suitable for retention as future crop. The patch should not be less than 2 ha.

Type D - Well Stocked Areas: Areas having more than 0.4 crop densities.

3.6.10.3 TREATMENT

Following types of treatment shall be given to areas as classified above. If necessary, nala bunding and gully plugging shall be done over the complete area of the coupe as per treatment map. The area-wise treatments proposed are as follows.

Type A : No felling shall be done.

Type B : Teak and suitable miscellaneous species shall be promoted with tending of natural regeneration. Dead and malformed trees will be cut back.

Type C : No plantation shall be done. Thinning will be done in the young pole crop to create an interval between remaining trees to 1/3rd of the height of the dominant pole in the patch as a thumb rule.

Type D : No plantation will be done. Felling will be carried out as provided under Marking Rules.

3.6.10.4. MARKING RULES AND MARKING TECHNIQUES

Marking will be done in the same year in which demarcation will be done. Soon after the receipt of the approved treatment map, marking will be done. The marking technique is described in detail in Chapter XII (Part-II), under Miscellaneous Regulations of this plan. Following marking rules are laid down for general guidance:

- (i) All Climbers which are not of medicinal values shall be cut.
- (ii) All pollarded trees shall be cut back.
- (iii) All stumps of illicitly cut trees still alive shall be dressed to produce strong coppice shoots, if natural regeneration is deficient and coppice regeneration is supplementing it.

The marking rules for each type of area, besides unwanted climber cutting will be as follows:

Type A : No marking shall be done.

Type B : All edible fruit and flower yielding trees shall be reserved from felling. The following trees shall be marked for felling:

1. All dead and malformed trees after retaining two dead trees/ha.
2. All but one vigorously growing coppice shoots per stool. (If it is essential to retain the coppice shoot.)
3. All live high stumps to be cut as close to the ground as possible and dressed.
4. The established multiple coppice shoots and poles shall be reduced to one per stool retaining the vigorous one.
5. The undesirable undergrowth which is preventing or likely to prevent the development of seedling regeneration of the desirable species shall be removed.

Type C: Poles will be spaced to a distance of one third of the dominant pole in the patch.

Type D: All edible fruit and flower yielding trees such as Moha, Char, Tendu, Chinch, Bel, Sitafal, etc. shall be reserved from felling. The following trees shall be marked for felling:

- (i) All dead and malformed trees. A tree will be treated as malformed if it does not have a clean bole up to at least 2 m above the breast height.
- (ii) All live and dead high stumps.
- (iii) All but one vigorously growing coppice shoots per stool where the stem density is less and natural Regeneration through seedling is inadequate. Otherwise coppice shoots should be marked for felling.
- (iv) Procedure and other rules for coupe marking given in Chapter II under SCI WC in this plan will be followed.

Verification of Marking

- (i) RFO shall carry out marking and shall also certify the marking abstract.
- (ii) ACF concerned shall verify 20% of the marking work. He shall inspect all the coupes to verify marking and shall record his findings and give corrective written instructions.
- (iii) DCF shall inspect 10% of the coupes to verify marking and take corrective measures.
- (iv) CF (T) shall check 2% coupe marking work randomly.

3.6.10.5 SOIL AND MOISTURE CONSERVATION WORKS

The soil and moisture conservation works shall be taken up along with marking operations and completed before onset of monsoon in the next financial year. The soil and moisture conservation works shall include gully plugging, area treatment and nala bunding. Wherever, there are nalas or Forest pond, desilting works will be carried out and fertile soil be used for nursery works. These must be

done with a combination of Toposheet map, GIS maps and preparation of a detailed treatment map of the area.

3.6.10.6 METHOD OF PLANTING

In the area where planting is done, well spaced natural regeneration seedlings and rooted stock is expected to be taken advantage of. The intention is to have an overall plant population of 2500 plants per ha. Hence the whole area of these category may be marked with line transects at 2 m x 2 m. This marking should be done on the map too. Thereafter each of the marked points should be examined as to whether a pit is to be dug there or not, based on the guidelines provided in Chapter No.2 (Part-II).

3. 6.11 SUBSIDIARY SILVICULTURAL OPERATIONS-

These works shall be carried out in the subsequent years of the main felling. These works will be carried out departmentally.

3.6.11.2 CUTTING BACK OPERATION (CBO):In Type D areas the following operations shall be carried out one year after the main felling:

- (a) All badly damaged trees not likely to recover shall be felled.
- (b) All climbers which are not of ecological and economical values shall be cut.
- (c) All left over established multiple coppice shoots and poles shall be reduced to one per stool. Side shoots will be preferred for retention.
- (d) The newly rising multiple teak coppice shoots shall be reduced to two per stool, retaining the most promising ones.

3.6.11.3 CLEANING

It will be carried out during the third and sixth year of the main felling in D type areas as per the following rules:

- (a) All inferior species including the undesirable undergrowth interfering or likely to interfere with the growth and development of seedling regeneration of Teak shall be cut back.
- (b) Coppice shoots shall be reduced to one per stool.
- (c) Damaged and malformed poles shall be cut back.
- (d) All Climbers which are not of ecological and economical values shall be cut.

3.6.11.4 WEEDING: Weeding shall be carried out in the plantation in order to boost the growth of natural and planted seedlings as per the model sanctioned by the competent authority.

3.6.12 REGENERATION

Regeneration is achieved in two ways.

- (1) Natural
- (2) Artificial

3.6.12.1 NATURAL REGENERATION

Area containing good natural Regeneration will be identified in the coupe and marked on the treatment map. Silvicultural operations as required shall be carried out and the regeneration shall be given protection.

3.6.12.2 ARTIFICIAL REGENERATION AND CHOICE OF SPECIES

Areas which are deficient in natural regeneration shall be supplemented with artificial regeneration. The choice of species will mainly depend upon local demand and suitability of the species for the site. Species like Teak not more than 50%, Ain, Bija, Shisham, Haldu, Lendia, Mowai, Salai, kusum, Char, Aonla, Amba, Chinch, Hirda, Beheda, Kulu, Bamboo etc may be raised as per the site suitability and local requirement. As these areas are near to human habitation and are prone to biotic pressure, it is recommended that local people as stake holders shall be actively involved in regeneration of the forest through the instrument of Joint Forest

Management. The plantations will be raised using standard planting techniques and duly approved by the competent authority.

3.6.13 ASSOCIATED REGULATIONS AND MEASURES

Protection is of paramount importance for obtaining natural regeneration. Natural regeneration is badly damaged due to fire. Fire causes annihilation of natural or artificial seedlings. Hence, such areas will be rigidly protected from fire. It will be worthwhile to get the fire protection done from JMFCs and pay them the amount in lieu of the area protected.

Similarly, grazing causes severe damage to establishment of regeneration. Due to grazing, young succulent, leading shoots are grazed/browsed or trampled by the animals. The areas after main felling shall remain closed to grazing for a period of five years. The closed areas shall clearly be mentioned in grazing licenses and people shall be made aware about closure of the coupes. In order to increase the carrying capacity of the area, palatable grasses shall be sown and villagers will be motivated to harvest the fodder for stall feeding. After removal of closure of grazing, rotational grazing may be followed based on the carrying capacity of the area. The local people shall be made aware of the importance of protection to the forests from fire, illicit grazing, illicit cutting and encroachment. Participation of local people shall be encouraged in protection and afforestation of Forests through Joint Forest Management as far as possible. For this purpose, regular awareness campaigns shall be arranged to explain the importance and benefit of regeneration and protection of forests. Village Forest Protection Committees shall be formed and a comprehensive Forest protection scheme shall be undertaken under JFM.

CHAPTER 4

AFFORESTATION WORKING CIRCLE

4.1 AFFORESTATION WORKING CIRCLE

The area of this Working Circle has been marked on the GIS based map of 1:150000 which is appended in the plan and a copy of the same is given on A4 size here.

4.2 GENERAL CONSTITUTION OF THE WORKING CIRCLE

This working circle comprises of open forests having density less than 0.4 with sparse vegetation and shrubby growth. The areas which were managed under Miscellaneous Working Circle, Coppice with Reserves, Pasture Improvement, Plantation and Fodder Reserve Working Circle of past management plans. These areas were managed under Afforestation Working Circle of Rao's working plan.

4.2.1 AREA ALLOCATION

The information from enumeration data, stock mapping, forest density classes from FSI and compartment wise density classes in digital format were utilized for allotment of this working circle. Forest areas with density of less than 0.4 with inadequate natural regeneration are included in this working circle. Areas of protected forests and unclassed forests are also included in this working circle. A total of 16919.23 ha is included in this working circle which constitutes 20 % of the division area. The range-wise allocation of compartments and area is shown in the table below:

TABLE NO. 4.1: DISTRIBUTION OF AREA IN AFFORESTATION WORKING CIRCLE

Sr. No.	Range	Total Area (ha)	No. of Compt.	Area allotted (ha) to AWC				% to the Area of Range (8/3*100)	% to the Area of WC
				RF	PF	UF	Total area (5+6+7)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Yavatmal	8902.41	35	2525.79	0	0	2525.79	28.37	14.93
2	Hiwari	11536.44	14	845.80	0	0	845.80	7.33	5.00
3	Wadgaon	7360.99	5	511.16	0	0	511.16	6.94	3.02
4	Jodmoha	13370.86	34	2131.36	26.96	0	2158.32	16.14	12.76
5	Ner	7180.06	44	2969.01	0	0	2969.01	41.35	17.55
6	Darwha	15233.9	76	5849.54	0	0	5849.54	38.40	34.57
7	North Arni	10777.78	17	2008.09	0	0	2008.09	18.63	11.87
8	South Arni	9172.17	2	51.52	0	0	51.52	0.56	0.30
Total		83534.61	227	16892.27	26.96	0	16919.23		100.00

4.3 GENERAL CHARACTERISTICS OF VEGETATION

The areas which are allotted to this working circle in general are under stocked and open with crop density less than 0.4. However, some of the better stocked patches are also noticed in some compartments. The site quality is poor which represents from IV A to IV B. Teak constitutes as the major species along with its principal associates such as Ain, Dhawda, Char, Tendu, Palash etc. in these forest areas. The soil is compact with little or no soil moisture or sub soil moisture and highly impoverished due to heavy grazing pressure. Natural regeneration is poor. The young recruits of Ain, Teak and Dhawda are observed in many compartments but they die back without getting established. Due to heavy grazing, establishment of natural regeneration is inadequate. Special efforts are required to be taken to regenerate these areas.

4.4 FELLING SERIES, CUTTING SECTIONS AND JFM AREAS

Felling Series and Annual Coupes: The entire area of this working circle is divided into 10 working Series with an average area of 1692 ha. and each working series is further divided into 20 coupes with an average area of 85 ha. The details of felling series and annual coupes is given in **AppendixNo. XXIV (A)** and **AppendixNo.XXIV (B)** of Volume-II.



4.5 BLOCKS, COMPARTMENTS AND JFM AREA (MARKED ON GIS BASED MAPS)

A total of 233 compartments are allotted to this working circle. The details of compartment wise area distribution are given in the table below.

TABLE NO.4.2: COMPARTMENTS ALLOTTED TO AFFORESTATION WORKING CIRCLE

Sr. No.	Working Series	Range	Compartments Alloted	Rangewise Allotment of Felling Series Area (ha)	Total Area of the Working Series (ha)
(1)	(2)	(3)	(4)	(5)	(6)
1	Asola	Ner	385, 388, 390, 431, 457, 572	322.3	1914.25
2	Asola	Yavatmal	392, 393, 394, 410, 521, 522, 523, 524, 525, 526, 527, 528, 552, 553, 569, 575, 490A, 533A, 533B, 550A, 550B, 550C, 550D, E649	1591.95	
3	Banait	Darwha	79, 84, 85, 86, 91, 92, 94, 97, 100, 108, 174, 177, 183, 312, E601, E602	733.59	1733.96
4	Banait	Jodmoha	E623, E624, E625	180.38	
5	Banait	Ner	68, 194, 205, 416, 549	373.28	
6	Banait	Wadgaon	E645, E646, E647	446.71	
7	Chandani	Hiwri	280, 283, 285, 288, 291, 292, 364, 563, 564	634.59	1757.37
8	Chandani	North Arni	51, 52, 54, 56, 57, 58, 293, 296, 297, 595	1090.61	

Sr. No.	Working Series	Range	Compartments Alloted	Rangewise Allotment of Felling Series Area (ha)	Total Area of the Working Series (ha)
(1)	(2)	(3)	(4)	(5)	(6)
9	Chandani	South Arni	59	32.17	
10	Dhamangaon	Darwha	104, 106, 107, 155, 156, 157, 159, 160, 178, 190, 588, E603	927.18	1617.65
11	Dhamangaon	Hiwri	287	159.14	
12	Dhamangaon	South Arni	E 642	19.35	
13	Dhamangaon	North Arni	321, 783, 784, E 640	511.98	
14	Gharefal	Darwha	109, 113, 152, 184, 449	367.84	1667.01
15	Gharefal	Ner	200, 202, 203, 391, 396, 397, 398, 401, 417, 423, 426, 434, 444, 445, 391A, 391B, E639	908.42	
16	Gharefal	North Arni	318, 319	122.94	
17	Gharefal	Yavatmal	488, 489, 491, 512, 516, 518, 519, 520	267.81	
18	Ghatkinhi	Darwha	114, 121, 129, 130, 133, 134, 150, 191, 767, 768	1061.58	1657.05
19	Ghatkinhi	Ner	418, 425, 446A, 446B, 447A	595.47	
20	Khopdi (Bk)	Darwha	110, 128, 131, 132, 139, 140, 142, 148, 149, 162, 164, 179, 180, 192, 206, 530, E600, E604,	1363.79	1579.06
21	Khopdi (Bk)	Ner	414	215.27	
22	Murzadi	Hiwri	291A, 291B	27.33	1616.49
23	Murzadi	Jodmoha	360, 361, 362, 363, 365, 366, 367, 369, 372, 534, 536, 538, 539, 565, C-87, C-88	1243.49	
24	Murzadi	Wadgaon	592, 209A	64.45	

Sr. No.	Working Series	Range	Compartments Alloted	Rangewise Allotment of Felling Series Area (ha)	Total Area of the Working Series (ha)
(1)	(2)	(3)	(4)	(5)	(6)
25	Murzadi	Yavatmal	513	281.22	
26	Ner East	Darwha	153	66.64	1630.46
27	Ner East	Hiwri	E606, E607	24.74	
28	Ner East	Jodmoha	E608, E609, E610, E611, E612, E613, E614, E615, E616, E617, E618, E619, E620, E621, E622	734.45	
29	Ner East	Ner	549A, E636, E637, E638	137.26	
30	Ner East	North Arni	320	282.56	
31	Ner East	Yavatmal	460, 550	384.81	
32	Sirasgaon	Darwha	63, 135, 136, 137, 151, 154, 165, 181, 182, 204, 596, 132A, 138A, E605	1328.92	1745.93
33	Sirasgaon	Ner	380, 395, 441, 447, 459A, 459B	417.01	
Grand Total				16919.23	16919.23

4.6 SPECIAL OBJECTS OF MANAGEMENT

These areas have been degraded due to heavy grazing, illicit felling and frequent fires. Considering these factors, the special objects of management for these areas are:

1. To increase vegetative cover, improve quality and composition of the area by tending natural regeneration and supplementing with plantations.
2. To improve soil condition by taking up suitable soil and moisture conservation measures.
3. To meet the local demand for fuelwood, fodder and NTFP requirements along with providing employment opportunities.

4.6.1 ANALYSIS AND VALUATION OF THE CROP

Stock mapping of the area was carried by territorial staff of Yavatmal forest division and was verified with the extensive enumeration data. The density maps obtained from Forest Survey of India, Dehradun have been utilized. The density of the forest in these areas was analysed and used for allotment of compartments to this working circle. Enumeration was carried out by SOFR unit, Amravati. The data was analysed and the results are given in the table below.

TABLE NO.4.3: GROWING STOCK IN AFFORESTATION WORKING CIRCLE

Sr. No.	Girth Class (cm)	Teak			Others			Total	
		No.	% w.r.t. Total Teak Spp.	% w.r.t. Total Stock	No.	% w.r.t. Total Misc. Spp.	% w.r.t. Total Stock	No.	% w.r.t. Total Stock
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	15-30	4.22	27.19	3.52	58.69	56.16	48.90	62.92	52.42
2	31-45	3.46	22.30	2.89	29.72	28.44	24.76	33.19	27.65
3	46-60	3.66	23.55	3.05	10.33	9.88	8.60	13.98	11.65
4	61-75	1.69	10.90	1.41	2.61	2.49	2.17	4.30	3.58
5	76-90	1.38	8.89	1.15	1.57	1.51	1.31	2.96	2.47
6	91-105	0.53	3.38	0.44	0.72	0.69	0.60	1.24	1.03
7	106-120	0.25	1.63	0.21	0.39	0.37	0.32	0.64	0.53
8	121-135	0.16	1.00	0.13	0.08	0.07	0.06	0.23	0.19
9	136-150	0.06	0.37	0.05	0.12	0.11	0.10	0.17	0.14
10	>151	0.12	0.75	0.10	0.29	0.28	0.24	0.41	0.34
Total		15.53	100	12.94	104.51	100	87.07	120.03	100

TABLE NO. 4.4:SPECIES-WISE GROWING STOCK (TREES/HA.) IN AWC

Group/ Species	Girth Classwise Classification in cms										
	15- 30	31- 45	46- 60	61- 75	76- 90	91- 105	106- 120	121- 135	136- 150	Above 150	Total
Group A :- Species of General Utility											
Shisam	0.29	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
Ain	0.12	0.04	0.21	0.00	0.02	0.02	0.02	0.00	0.00	0.00	0.43
Lendia	1.28	0.64	0.21	0.12	0.10	0.00	0.02	0.00	0.00	0.00	2.37
Teak	4.22	3.46	3.66	1.69	1.38	0.53	0.25	0.16	0.06	0.12	15.53
Total	5.92	4.18	4.09	1.81	1.50	0.54	0.29	0.16	0.06	0.12	18.66
Group B :- Species of Special Utility											
Haldu	0.06	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.12
Kalamb	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.04	0.08
Salai	0.00	0.06	0.10	0.02	0.02	0.04	0.02	0.00	0.00	0.08	0.33
Khair	0.14	0.06	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
Moin	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Dhawada	0.16	0.08	0.06	0.00	0.04	0.04	0.02	0.04	0.00	0.02	0.45
Hivar	4.05	2.32	0.64	0.04	0.00	0.00	0.00	0.00	0.00	0.00	7.04
Total	4.40	2.55	0.87	0.08	0.06	0.12	0.04	0.04	0.00	0.14	8.28
Group C :- Species of Minor Forest Produce											
Apta	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Awala	0.04	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
Behada	0.06	0.06	0.10	0.06	0.06	0.02	0.02	0.02	0.00	0.02	0.41
Bel	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.04
Chinch	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Jambhul	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
Pandhara Shiras	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Sitaphal	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04

Group/ Species	Girth Classwise Classification in cms										
	15-30	31-45	46-60	61-75	76-90	91-105	106-120	121-135	136-150	Above 150	Total
Bor	0.31	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
Moha	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.06	0.10
Neem	4.42	1.69	0.70	0.04	0.21	0.06	0.06	0.00	0.04	0.00	7.22
Tendu	1.85	0.99	0.33	0.14	0.12	0.04	0.02	0.00	0.00	0.00	3.48
Palas	40.93	21.85	6.69	1.89	0.72	0.27	0.10	0.02	0.04	0.00	72.51
Total	47.76	24.67	7.88	2.12	1.11	0.45	0.21	0.04	0.08	0.08	84.39
Group D :- Other Species											
Anjan	0.00	0.00	0.00	0.00	0.00	0.04	0.06	0.00	0.00	0.04	0.14
Babhul	0.60	0.23	0.10	0.04	0.02	0.02	0.00	0.00	0.00	0.00	1.01
Bahawa	2.47	0.49	0.16	0.04	0.02	0.02	0.00	0.00	0.00	0.00	3.19
Bharati	0.10	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Dudhi	0.99	0.82	0.64	0.14	0.20	0.06	0.04	0.00	0.02	0.00	2.90
Dudhkuda	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
Karanj	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
Maharukh	0.00	0.00	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.06
Kashid	0.02	0.02	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
Medsing	0.06	0.04	0.06	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.19
Pimpal	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
Shisu	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Rohan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Umbar	0.10	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
Other	0.21	0.04	0.06	0.02	0.04	0.00	0.00	0.00	0.02	0.02	0.41
Total	4.84	1.79	1.15	0.29	0.29	0.14	0.10	0.00	0.04	0.08	8.71
Grand Total :-	62.92	33.19	13.98	4.30	2.96	1.24	0.64	0.23	0.17	0.41	120.03

Regeneration:

Data on regeneration status was collected along with enumeration of the crop. The seedlings were enumerated in the following three categories as R1 upto 1 m height, R2 with 1 to 3 m height and R3 above 3 m height. The data is analysed and used to devise prescriptions for natural and artificial regeneration of forest areas. The status of natural regeneration in AWC areas is very poor. The total number of seedlings is 30/ha. The table of regeneration is given below:

TABLE NO. 4.5:RANGE-WISE REGENERATION STATUS IN AWC

Sr. No.	Range	No. of sample plots	No of Seedlings/ha			Total
			R1	R2	R3	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	North Arni	52	43	19	13	74
2	Yavatmal	56	30	43	26	99
3	Wadgaon	0	0	0	0	0
4	South Arni	9	37	12	8	65
5	Ner	133	0	0	0	0
6	Jodmoha	8	0	0	0	0
7	Hiwari	10	10	2	6	18
8	Darwha	250	7	5	8	21
Weighted Average			12	9	8	30

4.6.2 SILVICULTURAL SYSTEM

The main limiting factors for the establishment of seedlings in this area are insufficient sub soil moisture, highly compact soil structure and heavy biotic pressure. Topsoil has been washed away in a vast area since there is no significant vegetation. As a result, these areas do not have even adequate soil depth and porosity to support the tree crop, therefore intensive soil and moisture conservation measures shall be undertaken in these areas. Tending of existing rootstock, saplings, coppice shoots, supplemented by plantations are the main activities in this working circle. A two phase approach has been prescribed for these areas.

Phase I RestorativePhase

The duration of this phase will be a minimum of one year. Survey and demarcation, soil and moisture conservation works along with complete protection by digging TCM or fencing shall be undertaken in this phase. Nala bunding works and other appropriate soil and moisture conservation works shall be taken up on watershed basis. Contour trenches, deep CCT depending upon the site requirement shall be undertaken as prescribed in the chapter on 'Miscellaneous Regulations'. Singling and cut back operations shall be carried out in order to improve rooted stock in the area.

Phase II ProductivePhase

The duration of this phase shall be of 5 years immediately after the completion of restorative phase. The RFO shall inspect the area and prepare the treatment map in the 2nd year. The RFO shall prepare the treatment map with the features of crop density, soil type, topography and natural regeneration areas of one hectare at one place and above features shall invariably be shown on the treatment map. The treatment map shall indicate about the treatment proposed to be given grid wise. Minor repairs of soil and moisture conservation works shall also be undertaken if necessary. PPO work shall be undertaken from 2nd year onwards.

4.6.3: ROTATION PERIOD:Not applicable.

4.6.4: HARVESTABLE DIAMETERS:Not applicable.

4.6.5: REDUCING FACTORS AND REDUCED AREAS:Not applicable.

4.6.6: FELLING CYCLE: Not applicable.

4.6.7: DIVISION INTO PERIODS AND ALLOTMENT TO PERIODIC BLOCK (PB):Not applicable.

4.6.8: CALCULATION OF THE YIELD:No yield is prescribed for this working circle.

4.6.9: TABLE OF FELLING:Not applicable.

4.6.10: METHOD OF EXECUTING THE FELLING:Not applicable.

4.6.10.1: DEMARCATION: The annual felling coupe shall be demarcated one year in advance.

Preparation of the Treatment Map: After the demarcation of the coupe a treatment map will be prepared by the Range Forest Officer and it shall be verified by the Assistant Conservator of Forests emphasizing the suitability of sites for plantation, as well as the promising natural regeneration of areas. The treatment map thus prepared will be submitted to the DCF in charge of division, who after sample checking will give sanction to it. The following categories of area shall be shown distinctively in the treatment map:

- 1. Type A - Protection Areas:**It shall include areas having steep slopes i.e. more than 25°, eroded areas or areas liable to erosion, 20 meter wide strip on either side of water courses, riparian zones and sacred groves.
- 2. Type B - Understocked Areas:**It shall include the areas having less than 0.4 density, including barren lands and natural banks.
- 3. Type C - Groups of Young Poles:** Includes patches of well-grown pole crop of Teak and other species suitable for retention as a future crop. The patch should not be less than 2 ha.
- 4. Type D - Well Stocked Areas:**Areas having more than 0.4 crop densities.

Treatments: Treatments proposed for different categories of the areas are as under:

- 1. TypeA:**No felling is prescribed. The soil and moisture conservation works shall be carried out on watershed basis as given in the Chapter on 'Miscellaneous Regulations'.
- 2. TypeB:**Soil and moisture conservation works shall be carried out in order to increase the productivity of the soil and to check soil erosion. Teak and other species shall be planted in the under stocked areas, where the area exiting 5 hectare and

above in extent at one place as per requirements of site. No standing tree shall be marked for felling except dead trees retaining at least 2 trees/ha.

3. TypeC: No plantations shall be carried out in this area. Marking for thinning shall be done in the young pole crop as well as in old plantations to create appropriate spacing as per the stand table.

4. TypeD: No planting shall be done in these areas. Felling will be done as prescribed in marking rules.

4.6.10.2 MARKING RULES

Marking Techniques: Marking techniques for felling of the trees is as discussed in the chapter on 'Miscellaneous Regulations'.

Marking Rules: Marking shall be carried out by the Range Forest Officer under the guidance of Assistant Conservator of Forests concerned. The Deputy Conservator of Forests shall inspect as many coupes as possible to give proper guidance and instructions to the staff and also to have check against excess marking if any. The marking rules of various categories of areas are as under:

1. **Type A:** No tree shall be marked for felling.

2. **Type B:**

- No tree shall be marked for felling.
- All live high stumps shall be cut back.
- Multiple coppice shoots and poles shall be reduced to one per stool retaining the vigorous one.
- The unwanted under growth which is preventing or likely to prevent the development of seedling regeneration of the desired species shall be removed.

3. TypeC:

- The congested young poles shall be marked for thinning to reduce the congestion by bringing down the number of poles per ha. as per the yield table.
- The dead, dying, disease and malformed poles shall be marked first for thinning. The multiple poles shall also be thinned retaining one most promising pole for stool.
- Appropriate care shall be taken to retain the poles of seedling origin while removing poles of coppice origin.
- Congested crop in the old plantation areas shall also be marked for thinning retaining the number of trees per ha as prescribed in the stand table.

4. TypeD:

- Marking shall be done to reduce the number of stems or poles to one per stool retaining the most promising one in the entire multiple coppice teak crop.
- All live high stumps shall be cut back.
- All the dead trees shall be marked for felling retaining 2 per hectare.

4.6.11 SUBSIDIARY SILVICULTURAL OPERATIONS: Not applicable.

4.6.12 REGENERATION

Natural Regeneration

Natural regeneration of teak and other species, though noticed in the same patches at certain places, usually die before getting established due to highly compact soil structure coupled with bad drainage, aeration, high incidence of cattle grazing and recurrent fires. To help young recruits of teak and other species to establish develop natural regeneration, the following prescriptions shall be adopted:

1. Identification of the areas containing promising natural regeneration shall be done inside the coupe.
2. The undesirable undergrowth which is preventing or likely to prevent the development of natural regeneration of the desired species shall be removed.
3. Patches of natural growth shall be rigidly protected from the fire and grazing and suitable thinning and tending will be carried out. Coppice shoots which interfere with the development of young natural seedlings shall be removed. Opening up of top canopy by felling of marked trees and the ground cover at some places shall boost establishment of natural regeneration of teak and other species by providing better light and aeration.
4. Natural regeneration should be cleared of weeds within the diameter of one meter and these weeds, grasses, leaf litter, twigs, leaves and branches shall be spread in 15 cm. high layer all around the seedlings within the cleared area to provide organic mulch. Two or three spreads full of earth shall be thrown to the mulch in place. It will keep the soil around the plants free from weeds as well as help securing the loosening and aeration of the soil by worms and insects. In addition, stone mulching shall be done around the current year recruits in the areas where surface stones are available. Small stones shall be arranged in a circle closed around the very young seedlings which will help in retention of surface moisture as well as avoid accidental trampling by cattle or others.
5. These areas shall be protected from biotic interference as well as from recurring fires. Natural regeneration shall be supplemented with artificial regeneration in the under stocked areas.

Artificial Regeneration

In areas where natural regeneration is not sufficient, open or blank areas, plantation with suitable species shall be taken up under artificial regeneration. The number of seedlings to be planted is to be decided on the basis of soil conditions, rainfall and temperature. The choice of species to be planted will depend on the suitability of site.

Pre Planting Operations

PPO shall be carried out one year before actual planting work. The planting stock in nurseries should be in good condition. The planting stock must have different species and should be healthy with sufficient height and hardy enough to be planted. The seeds for raising nursery stock shall be from known sources preferably from plus trees of high forests and certified seeds.

Choice of Species

The choice of species must be based on climatic and edaphic conditions and also preference of local community. The native species that occur naturally, and of proven fodder grasses, fruit, non wood forest produce and some of the timber species shall be preferred. Some of the species such as Teak, Neem, Dhawda, Arjun, Babul, Khair, Jamun, Bel, Apta, Anjan, Biba, Bamboo, Behada, Hirda etc. may be planted. Palatable grass species like Sheda, Paunya and Marvel shall be preferred. Bamboo can be planted along the nalas. Better planting stock shall be ensured and the area of plantation is closed either by TCM or fencing. It is advisable that on the mound of TCM a row of suitable fast growing thorny species shall be planted along with Agave species.

First Year Operations

Planting shall be completed within a fortnight from the outbreak of monsoons. The teak seedlings or stumps shall be planted after first monsoon showers. Polybag plantation shall be taken up in case of miscellaneous species.

Weeding and Casualty Replacement

The weeding shall be done in the first year as per following schedule.

1st weeding : By the end of July

2nd weeding : By the beginning of September

3rd weeding : By the mid of October

Casualty replacement shall be carried out along with 1st weeding.

Second Year Operations and Third Year Operations

In the SYO casualty replacement and two weedings shall be carried out as per following schedule.

1st weeding : By the end of August

2nd weeding : By the end of October

Casualty replacement shall be done by mid July. Mulching and hoeing shall be carried out along with 2nd weeding. In the third year operation only one weeding will be done during the month of September followed by thorough soil working in the month of October.

4.6.13 ASSOCIATED REGULATIONS AND MEASURES

All annual coupes and plantation sites shall be provided fire protection. Effective protection against fire must be ensured during the fire seasons so that the survival and establishment of the seedlings for development into future growing stock can be achieved. Fire protection may be achieved through Joint Forest Management Committees. A comprehensive fire management plan shall be prepared by RFO every year and the same shall be scrutinized and sanctioned by the DCF.

The coupe shall remain closed to grazing for a period of 5 years after main felling. At the time of planting the under-stocked area in each coupe, the seeds of fodder grass like Paunya, Sheda, etc shall be sown to have enough fodder of good quality.

4.6.14 SOIL AND MOISTURE CONSERVATION WORKS

Soil and moisture conservation measures shall be undertaken in the restorative phase. These works shall be taken up along with marking and completed before the onset of monsoon of the next year. Detailed descriptions regarding soil and moisture conservation works given in Miscellaneous Regulations shall be followed.

CHAPTER-5

FODDER IMPROVEMENT WORKING CIRCLE

5.1 FODDER IMPROVEMENT WORKING CIRCLE (CLEARLY MARKED ON GIS BASED MAPS (1:150000))

The area of this working circle marked on GIS based map of 1:150000 scale is appended and a copy of the same is provided in A4 size here.

5.2 GENERAL CONSTITUTION OF THE WORKING CIRCLE

Forests included in this working circle are the areas managed under Pasture Improvement Working Circle, CWR, Plantation Working Circle and Miscellaneous Working Circle in the past. In Rao's Working Plan these areas were managed under Fodder improvement Working Circle. These areas are in the vicinity of villages and under severe biotic pressure. The extent of area allotted to this working circle is 12472.43 ha which constitutes 15 % of the division area. The range-wise allocation of area is shown in the table below.

TABLE NO. 5.1 : DISTRIBUTION OF AREA IN FODDER IMPROVEMENT WORKING CIRCLE

Sr. No.	Range	Area (ha) of Range	No. of Compt.	Area Allotted (Ha) to FIWC				% to the Area of Range	% to the Area of WC
				RF	PF	UF	Total Area (5+6+7)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Yavatmal	8902.41	4	626.36	0	0	626.36	7.04	5.02
2	Hiwari	11536.44	0	0	0	0	0	0.00	0.00
3	Wadgaon	7360.99	0	0	0	0	0	0.00	0.00
4	Jodmoha	13370.86	10	2278.14	0	0	2278.14	17.04	18.27
5	Ner	7180.06	33	3196.15	0	0	3196.15	44.51	25.63
6	Darwha	15233.9	62	6311.42	0	0	6311.42	41.43	50.60
7	North Arni	10777.78	0	0	0	0	0	0.00	0.00
8	South Arni	9172.17	1	60.36	0	0	60.36	0.66	0.48
Total		83534.61	110	12472.43	0	0	12472.43		100.00

5.3 GENERAL CHARACTERISTICS OF VEGETATION

The area allotted to this working circle contains degraded soils with heavy biotic pressure. The site quality of the area is IV and the area is sparsely wooded with species like Teak, Hiwar, Palas, Bor, Khair, etc. In majority of these areas less fodder value grasses like Kushal grass (*Andropogon contortus*) and Burbushi (*Eragrostis tennela*) are observed. The availability of palatable grasses such as Sheda, Pauniya and Marvel are present but in very less quantity. The sub type of vegetation is degraded scrub forest. The existing stock maps have been updated and the stock is assessed with the help of satellite imageries with appropriate ground truth verification. Mostly the areas are open and degraded.

5.4 FELLING SERIES, CUTTING SECTION AND JFM AREAS

Treatment Series and Annual Coupes: The working circle has been divided into 7 working series and each working series is divided into 20 annual coupes. The details of felling series and annual coupes is given in **Appendix No.XXV (A)** and **Appendix No.XXV (B)**.



5.5 BLOCKS, COMPARTMENTS AND JFM AREAS

There are 79 compartments included in this working circle and these are distributed over 4 ranges. The details are provided below:

TABLE NO.5.2: COMPARTMENTS ALLOTTED TO FODDER IMPROVEMENT WORKING CIRCLE

Sr. No.	Working Series	Range	Compt. No.	Rangewise Allotment of Working Series Area (Ha)	Total Area of the Working Series (Ha)
(1)	(2)	(3)	(4)	(5)	(6)
1	Bangaon	Darwha	117, 118, 124, 125, 196, 197, 450, 453, 454, 455, 456, 458, 560, 561, 456A	946.33	1981.48
2	Bangaon	Ner	193, 195, 199, 201, 386, 387, 389, 435, 436, 437, 438	1035.15	

Sr. No.	Working Series	Range	Compt. No.	Rangewise Allotment of Working Series Area (Ha)	Total Area of the Working Series (Ha)
(1)	(2)	(3)	(4)	(5)	(6)
3	Darwha	Darwha	126, 127, 143, 144, 145, 146, 147, 172, 176, 185, 187, 439, 440, 448, 594	1835.46	1835.46
4	Kalamb	Jodmoha	325, 327, 347, 353, 354, 377, 535, 567	1679.21	1679.21
5	Mendhala	Jodmoha	355, 356	598.93	1709.97
6	Mendhala	Ner	381, 382, 383, 384, 402, 419, 421	484.68	
7	Mendhala	Yavatmal	463, 357A, 357B, 464A	626.36	
8	Mozar	Ner	198, 420, 422, 424, 427, 428, 429, 430, 433, 442, 446, 459, 461, 462, 571	1676.32	1676.32
9	Palsi	Darwha	62, 65, 101, 103, 119, 120, 122, 123, 138, 141, 158, 161, 175, 189, 451, 452, 558	1841.57	1841.57
10	Pathrot	South Arni	55	60.36	1748.42
11	Pathrot	Darwha	64, 66, 67, 70, 71, 87, 96, 112, 116, 166, 167, 443, 590, 191A, 529A	1688.06	
Grand Total				12472.43	12472.43

5.6 SPECIAL OBJECTS OF MANAGEMENT

1. To improve the quality and quantity of fodder grasses by introducing the better varieties of fodder grass species and fodder tree species.
2. To meet the local demand for fodder and to reduce the heavy grazing pressure on the forests.
3. To improve the site through soil and moisture conservation works.

5.6.1 ANALYSIS OF THE CROP

Stock mapping was done by territorial staff of Yavatmal forest division and was verified with the enumeration data. Satellite imageries and density maps of FSI were used for verification of stock maps. Areas are mostly open and blank with

sparse tree growth. The density ranges from 0.1 to 0.4. Analysis of the enumeration data highlights the non-teak percentage (68%) is more in comparison to teak (32%). The matured teak trees are very less. The total number of trees per ha is 202. The enumeration was carried out by SOFR Amravati and the results are given in the table below.

TABLE NO.5.3: ENUMERATION DATA (GIRTH CLASSWISE) IN FODDER IMPROVEMENT WC

Sr. No.	Girth Class (cm)	Teak			Others			Total	
		No.	% w.r.t. Total Teak Spp.	% w.r.t. Total Stock	No.	% w.r.t. Total Misc. Spp.	% w.r.t. Total Stock.	No.	% w.r.t. Total Stock
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	15-30	17.44	27.37	8.62	58.76	42.41	29.06	76.20	37.68
2	31-45	15.37	24.12	7.60	43.23	31.20	21.37	58.60	28.97
3	46-60	12.23	19.19	6.05	19.84	14.32	9.81	32.07	15.86
4	61-75	8.18	12.84	4.05	6.36	4.59	3.15	14.55	7.19
5	76-90	5.04	7.91	2.49	4.13	2.98	2.04	9.18	4.54
6	91-105	3.22	5.06	1.59	1.82	1.31	0.90	5.04	2.49
7	106-120	1.16	1.82	0.57	1.74	1.25	0.86	2.89	1.43
8	121-135	0.50	0.78	0.25	0.99	0.72	0.49	1.49	0.74
9	136-150	0.33	0.52	0.16	0.91	0.66	0.45	1.24	0.61
10	>151	0.25	0.39	0.12	0.75	0.54	0.37	0.99	0.49
Total		63.72	100	31.51	138.52	100	68.49	202.24	100

During the Rao's plan period, a total of 558 ha of fodder plantation has been developed through CAMPA funds. The details are as follows:

TABLE NO.5.4: FODDER PLANTATIONS IN YAVATMAL DIVISION

Year	Range	No. of Sites	Compartment	Area (ha)
(1)	(2)	(3)	(4)	(5)
2020-21	Jodmoha	4	353, 325, 326, 327	50
	Ner	5	381, 384, 382, 383, 198	109
	Darwha	8	65, 70, 64, 67, 71, 62, 187, 448	120
	North Arni	3	263, 263, 266	30
	Total	20		309
2021-22	Yavatmal	1	415	10
	Jodmoha	4	353, 354, 326, 327	80
	Ner	3	198, 382, 383	60
	Darwha	5	62, 64, 67, 71, 448	79
	North Arni	1	266	20
	Total	14		249
Grand Total		34		558

Choice of Grasses: Those grasses which give high yields in low rainfall areas are chosen. Such species include:

TABLE NO.5.5: FODDER GRASS SPECIES

Sr. No.	Local Name	Botanical Name	Protein %	Potential Yield (kgs per ha.)
(1)	(2)	(3)	(4)	(5)
1	Marvel	<i>Dichanthium annulatum</i>	7%	2600
2	Sheda	<i>Sehima sulcatum</i>	6-7%	1800
3	Pavnya	<i>Sehima nervosum</i>	5%	3100

5.6.2 SILVICULTURAL SYSTEM

Based on the grass and forest resources of the site, the silvicultural systems to be followed are as under.

1. Regulated and rotational grazing in pasture areas.
2. Regulating seeding, grass cutting and complete closure to grazing in identified grasslands.

5.6.3 : ROTATION PERIOD: Rotational grazing is practiced.

5.6.4 : HARVESTABLE DIAMETERS: Not applicable.

5.6.5 : REDUCING FACTORS AND REDUCED AREAS: Not applicable.

5.6.6 : FELLING CYCLE:Not applicable.

5.6.7 : DIVISION INTO PERIODS AND ALLOTMENT TO PERIODIC BLOCK (PB): Not applicable.

5.6.8 : CALCULATION OF YIELD: The yield is fixed by area.

5.6.9 : TABLE OF FELLING:Not applicable.

5.6.10: METHOD OF EXECUTING THE FELLING/CUTTING: The grass is to be harvested on “Cut and Carry” basis as regulated by the Department, preferably through JFMCs.

5.6.11 SUBSIDIARY SILVICULTURAL OPERATIONS CLEANING AND THINNING

Demarcation: The coupes due for closure to grazing shall be demarcated one year in advance, by cutting 3 metre wide lines and erecting pillars at suitable intervals.

Treatment: Each year area suitable for fodder development shall be selected from due coupes and shall be developed for fodder either by removal of obnoxious weeds and unwanted grasses or through ploughing and planting of suitable grasses. Depending on the requirement of site, suitable options for fencing can be taken up.

5.6.12 REGENERATION Not applicable

5.6.13 ASSOCIATED REGULATIONS AND MEASURES

(i) Seeding of Grasses

In order to allow seeding of fodder grasses, the coupe shall be closed to cutting of grass and shall be prohibited from beginning of June to end of November after which the grass may be allowed to be removed by cutting.

(ii) Fire Protection

The areas shall be protected from fire with the involvement of local people or JFM committees.

5.6.14 METHOD OF TREATMENT

1. As these areas are highly degraded, extensive soil and moisture conservation measure works like gully plugging, nala bunding at suitable places and contour trenches depending upon the site quality are prescribed. Soil and moisture conservation works shall be done as specified in ‘Miscellaneous Regulations’.

2. All obnoxious weeds, thorny shrubs and bushes shall be uprooted and the unpalatable grasses shall be removed by ploughing in the area in pre flowering stage.
3. Broadcasting of seed of superior grass species shall be taken up after ploughing along with contour trenches at the onset of monsoon. However plantation of tussocks of palatable grass species shall be a preferred option, when possible.
4. Seed broadcasting and tussock planting of good palatable grasses like Sheda (*Sehima nervosum*), Paunya (*Schima salcutum*), Marvel(*Dicanthum annulatum*), Ned Gavati (*Panicum antidotale*), etc. shall be carried out. The fodder tree species prescribed are Babul (*Acacia nilotica*), Anjan (*Harwickia binata*), Sirus (*Albizia lebbek*), Apta (*Bauhinia sp.*), Tiwas (*Ougenia daldergioides*), etc. However, the selection of fodder species shall be as per the site requirement.
5. The plantation area shall be completely protected from grazing and fire. The area shall be closed with fencing or cattle proof trenches in order to have a complete protection.
6. The area shall be effectively fire traced and protected from fire every year.
7. The fodder grasses shall be allowed to be cut only from 3rd year onwards after seeding.
8. The cutting of grasses along grid line and fire lines for stall feeding of cattle shall be allowed in these areas for first three years after planting.
9. Cutting of grass shall be carried out in strips and in a perpendicular direction of the wind.
10. Grazing in non plantation areas shall be regulated as per Government policy on rotation basis.

CHAPTER–6

WILDLIFE MANAGEMENT

Wildlife plays an indispensable role in our lives and the overall health of the planet. Beyond their intrinsic value, animals and plants contribute to various ecological processes, maintaining the delicate web of life that sustains us all. From the pollination of crops by bees and butterflies to the regulation of pest populations by predators, wildlife serves as the bedrock of countless ecosystem services that benefit humans. These services range from clean air and water to nutrient cycling, soil fertility, and climate regulation, all of which are essential for our well-being.

From forests to grasslands and meandering rivers, this region harbors a wealth of flora and fauna, making it a veritable haven for wildlife. Recognizing the significance of wildlife in maintaining ecological equilibrium and fostering sustainable development, this chapter aims to shed light on the critical importance of preserving and conserving the rich biodiversity.

This chapter on wildlife management aims to delve into the multifaceted strategies and initiatives undertaken to protect and manage the region's diverse wildlife. The National Wildlife Action Plan (2017-31) recognizes the need of looking outside Protected Areas for wildlife conservation. Furthermore, this chapter will address the need for scientific research, monitoring, and effective policy frameworks to guide conservation efforts. It will underscore the significance of raising awareness among the public and fostering a sense of stewardship towards wildlife, emphasizing the importance of education and outreach programs. The area covers the whole division and is therefore not specifically marked on GIS based map.

6.1 ANALYSIS OF THE WILDLIFE IN THE DIVISION

A wide variety of fauna is noticed in this division; however, its distribution is quite uneven. Wildlife population density varies with the habitat depending upon

availability of food, water and shelter. Wildlife commonly found in the division is as below (detailed list is given in the List of Fauna under Introduction):

TABLE NO.6.1 WILDLIFE POPULATION ESTIMATION

Sr. No.	Species	Wildlife Census					
		2016	2017	2018	2019	2020	2021
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Leopard	-	-	-	-	16	20
2	Hyena	-	-	-	14	-	-
3	Wild dog	-	-	-		3	4
4	Jackal	40	40	10	16	25	14
5	Wolf	50	54	56	50	61	64
6	Sloth bear	15	20	20	16	25	24
7	Chausinga	-	-	-	-	-	-
8	Spotted deer	28	19	23	23	32	25
9	Blackbuck	25	32	20	25	15	11
10	Barking deer	45	47	40	76	26	44
11	Nilgai	943	765	808	893	717	803
12	Peafowl	80	37	50	84	50	91
13	Jungle cat	-	2	3	6	15	14
14	Palm civet	-	-	-	-	-	-
15	Mongoose	19	27	28	30	36	37
16	Wild pig	973	476	965	921	904	852
17	Hare	35	34	28	55	45	42
18	Common langur	830	732	850	386	781	757

6.2 SPECIAL OBJECTIVES OF MANAGEMENT

1. To ensure protection and conservation of wildlife in this division.
2. To ensure scientific management of wildlife by undertaking measures like habitat management and regular monitoring of the population of wild animals.

3. To ensure protection of ecologically sensitive and special habitat sites for wildlife conservation, such as riparian zones, mesic sites (natural water seepage sites), perennial water holes, natural grasslands, sacred groves, high altitude plateaus, natural resting, breeding and nesting sites (caves, snags, overhangs, groves of old Ficus trees, thick Bamboo groves etc.)
4. To reduce dependency of fringe villages on forests and to reduce human wildlife interactions.
5. To involve local people in wildlife conservation and reduce human wildlife interactions.
6. To promote and encourage ecotourism without disturbing and damaging wildlife.

6.3 THREATS AND CHALLENGES TO WILDLIFE

The wild life in this area dwindled over a period of time due to various reasons such as habitat degradation, poaching, fire, grazing etc.

6.3.1 HABITAT FRAGMENTATION AND HABITAT LOSS

Wildlife requires continuous large patches of forests for maintaining a minimum threshold of population to thrive. Anthropogenic interferences in terms of linear projects (roads, railways, irrigation, etc.) fragment the forests. Habitat fragmentation, caused by human activities such as urbanization, agriculture, and infrastructure development, has significant implications for wildlife populations. Firstly, fragmented habitats result in the isolation of wildlife populations, restricting their ability to disperse, find mates, and maintain genetic diversity. This can lead to reduced genetic variation within populations, making them more susceptible to diseases and genetic disorders. Additionally, small and isolated populations are more vulnerable to environmental disturbances, natural disasters, and climate change, as they have limited capacity to adapt and recover.

Secondly, habitat fragmentation disrupts natural ecological processes and alters species interactions. Fragmented habitats often result in the loss of critical resources such as food, water, and shelter, leading to changes in wildlife behavior and distribution. Species that require large territories or specific habitat conditions may suffer the most, as their habitat patches become smaller and more fragmented. This can lead to increased competition for limited resources, conflicts with human activities, and ultimately, population declines. Furthermore, fragmented habitats can disrupt the natural predator-prey dynamics, disrupt pollination and seed dispersal networks, and impact the overall functioning of ecosystems.

Grasslands because of their unique characteristics are also home to a host of endangered wild species that are adapted to the semi-arid conditions. Species like the Indian Wolf, Indian Gazelle, Blackbuck, Indian fox, Stripped Hyena occur in the grasslands most of which occur outside the Protected Area matrix. These areas therefore cannot be viewed or managed in the traditional “Protected Area” method because of the extensive spread of this ecosystem as well as the presence of dense human populations that have traditionally used these areas posing a challenge to the conservation of grasslands. Treatment of grasslands as wastelands and attempts to perform afforestation activities have negatively impacted these ecosystems.

6.3.2 POACHING: Though there is no organized poaching in the area, incidences predominantly of poaching of wild pigs is noticed. In Yavatmal and taluka towns' markets, at times, birds such as Parakeets, Partridges, Quails, Water-Birds, Monitor lizards, Tortoise, Turtles etc. are brought for sale.

6.3.3 FIRE: Forest fire is frequent especially during dry seasons. Repeated forest fires occur in this tract. Forest fire damages natural habitat and drives the animals towards human habitations resulting in human wildlife conflict. The fires in the interior of the forests, besides destroying the natural habitat of the forest fauna, drive them to take shelter near the human habitation and make them easy targets of poachers. Due to fire even the young ones may perish. Besides other animals, reptiles and birds, which live on ground and cannot escape the fire and its heat. In case they survive, their food, grasses, herbs and shrubs are destroyed. The whole

tract experiences water scarcity in summer. These fires aggravate the already existing water scarcity and expose these animals to above mentioned risks. It in turn increases the man animal conflict.

6.3.4 GRAZING: During the last ten years there is a rise in cattle population. The total livestock population in Yavatmal division is 3,99,899 as per 20th livestock census 2019. Grazing pressure has increased manifold in the past few years. Heavy grazing in forest areas takes away available fodder for most wild herbivores. Grazing also leads to spread of diseases to wild animals besides affecting the habitat severely. This along with fire also poses a serious threat to habitat of grassland birds.

Illegal grazing is on rise especially during the monsoon season, disturbing the natural regeneration in the division. Goat and sheep grazing by the Dangar community is observed in the grassland areas of Ner, Darwha and Yavatmal ranges.

6.3.5 DISEASES: The livestock from the villages in the forests regularly frequent the forests and share the waterholes used by wild animals. Therefore, various diseases common in domestic cattle, and which spread through contact and are water borne (contagious diseases) are passed from livestock to wild animals. Most frequent is foot and mouth disease. Other diseases which may occur are anthrax, rabies, FMD and canine distemper. FMD has a potential to wipe out large populations, while rinderpest, anthrax and rabies are highly infectious and lead to certain death.

6.3.6 HUMAN-WILDLIFE CONFLICT

Damages to the Crops: Incidences of crop damages by herbivores have been reported predominantly in forest fringe villages. This is leading to economic losses to farmers. Farmers are compensated for the losses as per the Government orders issued from time to time.

Injuries to Cattle & Human: Tigers and Leopard sometimes kill domestic cattle grazing in the forests. There are also cases of human injury and even death due to attacks from other wild animals like wild pigs. Statistics of damage to humans is given in **Appendix No. VIII.**



TABLE 6.2: DAMAGE DUE TO WILDLIFE AND COMPENSATION SANCTIONED
(IN RS. THOUSANDS)

Financial Year	Humans				Livestock		Crop			Total Compensation Sanctioned (5+7+10)
	No. of Deaths	Compensation	No. of Injured Persons	Compensation	No. of Cases	Compensation	No. of Cases	Hectare	Paid Compensation	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2012-13	0	0	4	107	6	48	577	918	719	2379
2013-14	0	0	12	145	12	98	834	2111	1738	4950
2014-15	1	800	6	26	21	141	395	227	625	2242
2015-16	1	800	28	461	68	449	5722	2455	7638	17622
2016-17	0	0	8	339	59	301	3946	1777	9447	15877
2017-18	2	1600	39	1299	68	1072	6950	6145	15845	33020
2018-19	1	1500	30	996	81	1021	8753	6884	21943	41209
2019-20	4	6000	20	432	98	1446	7974	2800	24948	43722
Total	9	10700	152	3961	48	777	35151	23317	82903	157018

6.4 FUTURE MANAGEMENT

6.4.1 STANDING ORDER (WILDLIFE) NO.001

The PCCF (WL) MS, Nagpur has issued a standing order (Wildlife) No.001 which prescribes duties and lists measures for the protection and conservation of the wildlife outside PAs. The territorial staff of the division shall scrupulously implement these prescriptions.

Following are the general prescriptions, majority of which are based on the guidelines under this Standing Order.

1. Duties of Forest Guard, Forester, RFO and ACF include:
 - Keeping information of waterholes, particularly in summer and special vigilance at all the waterholes in the division.

- Keeping a watch on the electric lines passing through forests.
 - Ensuring registration of arms licenses as required under Wildlife (Protection) Act, 1972.
 - Cognizance of cases of injury due to wild animals as per Government orders from time to time with speedy and transparent disposal of cases.
 - Keeping track of animals like tiger, particularly tigress with cubs and a watch on such vulnerable animals.
 - Proper disposal of carcass of wild animals found dead or killed.
 - Local staff shall maintain record of sensitive wildlife areas such as areas with heavy wild animal concentration.
 - Establishing a network of informers with the aid of the Secret Service Fund.
 - There shall be regular short-term training/workshops in anti-poaching activities and legal requirements in dealing with wildlife offence cases.
 - Cases of man-animal conflict should be handled swiftly and efficiently. Keeping in view the area of the division, at least one Rapid Response team shall be operationalized 24 x 7. Such team should be given need based training. Every range headquarters should contain equipments necessary to handle conflict situations.
2. Nature education programme in the villages adjoining forests, schools and colleges shall be arranged.
 3. Ecologically sensitive habitats shall be identified and protected.
 4. Antler trade is banned; hence, no collection of shed antlers is to be allowed.
 5. The involvement of Honorary Wildlife Warden and dedicated NGOs be encouraged for nature education programmes.

6. It shall be ensured that cattle grazing in forests near the important wildlife habitats are inoculated against contagious diseases.

6.4.2 CREATION OF DATABASE

The division shall carry out survey of riparian zones, mesic sites, perennial waterholes, saltlicks, natural wallows, resting places, breeding and nesting sites, etc. and map them on GIS platform for their protection and management. The range office will also maintain a meticulous record of these sites on a register named “Register of the Special Wildlife Habitat” and update it annually by an officer not below the Range Forest Officer.

The division shall undertake annual population estimation of the wildlife, including the migratory and other rare birds, in addition to All India Tiger and Leopard population Estimation. Special note should be taken if any nesting site of endangered birds such as Vultures is noticed. Concurrent monitoring of top carnivores through camera traps shall be taken up. All cases of compensation (crop, livestock and human) along with GPS coordinates should be mapped on the GIS platform for better management.

6.4.3 DELINEATION AND MAPPING OF SPECIAL HABITAT AREAS

Delineation of special wildlife habitat sites including natural water seepage sites (mesic sites), waterholes, natural wallows and saltlicks used by the wildlife, breeding sites, dens or nesting sites of animals and birds appearing in the Schedules of the Wildlife (Protection) Act, 1972 shall be carried out and marked on the divisional/range maps. A strip of 50-meter around special habitat sites shall also be delineated and mapped to serve as buffer for the site.

While preparation of treatment map of coupe for working in the area-specific working circles, the special wildlife habitat sites given above shall be identified and marked on the map along with its buffer of 50 metre wide strip around.

6.4.4 HABITAT DEVELOPMENT WORKS

Due to continuous biotic pressure, wildlife habitat has also deteriorated and has reached a critical condition. The most important factors in the habitat are water, food, safe places for resting, breeding, and nesting. Wallows and salt licks are other factors. To meet the minimum requirement of the wild animals the following activities are recommended:

Marking Reservations and Other Restrictions:The following prescriptions have been made for implementation along with coupe operations and other treatment prescriptions, in the wildlife area-specific coupes.

- No felling of trees or harvesting of any sort shall be allowed in riparian zone.
- While marking of dead, wind fallen and malformed trees in annual coupes, 2 trees per hectare shall be kept reserved, as snags and dens to provide for nesting and resting of wildlife. No fruit tree of wildlife importance shall be marked for felling in the annual coupes.
- While harvesting, at least 2 hollow logs, of low commercial value, per hectare shall be reserved for shelter of wildlife.
- Tendu collection centres or labour camps shall not be allowed near waterholes frequented by the large mammals or other important wildlife species. The labour camps shall be established away from areas of high wildlife density.

Development of Fodder :

- The existing grass areas shall be protected from biotic pressure and restricted near habitations. Due to heavy domestic cattle grazing these grassland patches are invaded with unpalatable grass and weed growth.
- The carrying capacity for grazing is determined after excluding the forest area required to meet fodder requirements of the wild animals and ecologically sensitive sites and special habitat sites for wildlife in the area.

- Habitat improvement is proposed at places having high density of wildlife and the areas frequented by both domestic animals and wildlife. Special efforts are to be initiated to develop meadows.
- Plantations prescribed in various working circles shall include at least 10 percent of fodder and fruit species of wildlife importance. *Ficus* spp. (Vad, Umbar), Ber, Sitafal, Anjan, etc. are recommended for this purpose.

Water Management:

Water management includes maintenance, strengthening of all existing waterholes and creation of new artificial waterholes. Water availability, or the scarcity of it, is one of the major factors that decide the health of a habitat. Its non-availability at sufficient places in the forests also increases probability of animals being found on the limited waterholes or near villages and thereby increases their susceptibility to poaching. Water is a major limiting factor during the summers in these forests. The waterhole density shall be commensurate with the density of wild animals found in the area and as per the wildlife management regulations. To meet the requirement the following steps may be taken up:

- All the perennial and ephemeral waterholes shall be identified, recorded and marked on divisional/range maps.
- De-silting, if required, shall be carried out during summer to provide adequate drinking water. Leaf litter which falls in the waterholes and gets decomposed making water unhealthy shall be cleared during April and May.
- Creation of additional waterholes (permanent and temporary) is prescribed so that undisturbed waterholes are available. Waterholes shall not be created at least 2 kms from the nearest village boundary so as to avoid the animals moving towards the human habitation. Approach to waterholes shall be made accessible by providing rough surfaces and smooth slopes.

- Small nala bunds, underground bunds and other technically sound small water harvesting structures may be constructed across the streams to create waterholes and habitat development.
- Small cement concrete saucer shaped waterholes shall be constructed at suitable and safe places and be linked with solar powered pumps fitted to bore wells.

Food/Prey Base:

Whether the prey base is adequate or not shall be ascertained from regular herbivore count. Any downward trend should be looked into seriously and possible reasons for its downslide must be found out and rectifying steps must be taken. To improve the prey base, care of herbivores should be taken by improving the assured fodder availability in the forest, especially during the summer season, when the forest grasslands are burnt. The open areas in wildlife rich zones should be developed into meadows for the herbivores.

Development of Nesting Sites:

To provide suitable nesting places to these birds, seed sowing of species like Babul and stake planting of species such as Banyan and other Ficus spp. should be done near water-bodies and in the riparian areas.

6.4.5 PROTECTION MEASURES FOR WILDLIFE

Considering the presence of wildlife, monitoring of wild animal health is important. Presence of domestic cattle increases the vulnerability of wild animals. Communicable animal diseases of bacterial, viral, protozoan and rickettsial origin may threaten the wildlife population. The total livestock population in six talukas of Yavatmal Forest Division is 3,99,899 as per 20th livestock census 2019. There are many villages adjoining the forest area. They are dependent on agricultural and forestry works. These villages, with large number of livestock, are a threat to wild animals as they share the same water bodies and grazing grounds. Due to common

grazing and drinking water at same places, many contagious diseases may spread in the wild animals. With the help of the veterinary department the following preventive measures in such villages should be undertaken.

a) Vaccination of Village Cattle:

All cattle of adjoining villages within 5 km from the boundary of Protected Areas should be vaccinated every year for important diseases. This activity shall be monitored by the PA manager and also DCF (Territorial).

b) Regular Health Check-up for Cattle:

Forest staff, with the help of veterinary doctor of the area, should organize annual cattle health check-up camps in villages. Required vaccination should be done and if required, proper treatment to sick animal should be given.

Sensitization of Field Staff:

The field staff of the Division should be trained in day to day wildlife management and protection works. They should work in close cooperation with the wildlife wing.

Protection from Poaching and Trade:

The forest staff shall develop an intelligence system with the help of local people, specially with the Joint Forest Management Committee, to gather information about any activities related to poachers and traders of wildlife. Special funds are provided by the department for gathering such information.

Regular patrolling by the staff shall be carried out in the areas where the population of wildlife is more, specially during summer when these animals become more vulnerable due to shortage of water in the forest areas. The forest staff shall also be vigilant in the towns' market where at times birds like Parakeets, Partridges, Quails, Water-Birds, Monitor lizards, Tortoise, Turtles etc. are brought for sale.

Protection of Forest from Over-Grazing and Fire:

After poaching, uncontrolled grazing and fire are the most important factors which adversely affect wildlife. To restrict illegal grazing, by cattle including goat, sheep etc., and during the fire season, to prevent the forest fires, patrolling parties should carry out regular patrolling in the sensitive areas of the forest.

6.4.6 DR. SHYAMA PRASAD MUKHARJEE JAN VAN VIKASYOJANA

This is a wholistic scheme operational since 2015. The areas falling within 5 kms of Tiger reserves/National Parks and Wildlife Sanctuaries can be addressed through this scheme. The purview of this scheme has been recently expanded to include villages outside 5 km radius of the Protected Area. This scheme includes following activities:

1. Wildlife protection and conservation.
2. Decreasing human wildlife conflict.
3. Developing alternate livelihood.
4. Improving cleanliness aspects.
5. Enhancing dairy development.
6. Undertaking watershed development.
7. Ushering agricultural development.

6.4.7 CAPACITY BUILDING

Books related to disease of wild animals, treatment, tranquilization, wildlife management etc. should be supplied to the field staff to improve their management skills. Short duration training for tranquilization of wild animals, to the forest staff and veterinary doctors, shall be imparted. Special care to motivate and orient the field staff should be through regular meetings, guidance and workshops. Some of the RFOs and Foresters shall be sent to short term training in the Chandrapur Forest Academy and Wildlife Institute of India, Dehradun. Visits to Protected Areas should be carried out to expose the field staff to the technical aspects of wildlife management.

6.4.8 AWARENESS GENERATION AND ECO-TOURISM

Active involvement and support of village communities in protecting and managing sensitive ecological and special habitat sites/areas are crucial. To achieve this, it is necessary to consider the genuine needs and concerns of the local communities. Undertaking eco-development works in villages surrounding these sites and promoting eco-tourism through camping and nature interpretation facilities can help garner their support. Collaboration with the Maharashtra Tourism Development Corporation (MTDC)/ FDCM is recommended for site development. Additionally, creating eco-centres at prominent water bodies and specific habitat sites can serve as hubs for awareness generation, nature interpretation, and eco-tourism.

Awareness generation campaigns shall be taken up to involve local villagers in the wildlife conservation programme. Village Panchayats and JFMCs shall be involved actively to further the cause of wildlife protection. Teaching institutions viz. schools, colleges, etc. and NGOs shall be involved through nature camps, wildlife film shows, exhibitions, seminars, competition, etc.

CHAPTER 7

NON TIMBER FOREST PRODUCE

Traditionally Non Timber Forest Produce (NTFP) refers to all biological materials other than timber extracted from natural forests for human and animal use and have both consumptive and exchange value. Globally NTFP/NWFP are defined as “forest products consisting of goods of biological origin other than wood, derived from forest, other woodland and trees outside forests”. It is estimated that 275 million poor rural people in India (20% of total population) depend on NTFPs for at least part of their subsistence and cash livelihoods. NTFP sector has untapped potential to create huge employment opportunities. Historically, the NTFP sector was neglected for many decades from mainstream forestry and they were considered as ‘minor’ (Minor Forest Produce). NTFPs have a tremendous potential to involve local collectors for establishing micro, small and medium enterprises through clear tenured rights, better collection methods, financial support, capacity development, infrastructure and institutional support in near future. With these efforts there is a potential to create large scale employment opportunities thereby, helping in reducing poverty and increasing empowerment of particularly women, tribal and poor people of the poorest and backward districts of the country.

Non Timber Forest Produce (NTFP) plays a key role in the life and economy of communities living in and around forest. NTFP is mostly collected by the economically backward people living in and around forest areas. The tribal people have been conserving plant and crop genetic resources as well as the knowledge on their utility. The people living in forests mostly supplement their food with leaves, tubers, flowers and fruits all year around. The medicinal plants play a key role in the health support systems in remote villages.

7.1 ANALYSIS OF THE CROP

The species of non timber forest produce are available throughout the tract with varying degrees. These contribute to a large extent to meet the non wood forest produce demand of local forest dwellers directly or indirectly. They play an

important role in generating employment to the local people. The important non wood forest produce available in this division are Moha flower, Moha seed, Tendu, Hirda, Behada, Aonla, Charoli, Kulu, Dhawda and Honey.

TABLE NO.7.1 NTFP SPECIES OF YAVATMAL DIVISION
(AS PER ENUMERATION DATA - 2022)

Sr.No.	Name of species	Scientific Name	Trees/ha.	Number of Trees
(1)	(2)	(3)	(4)	(5)
1	Apta	<i>Bauhinia racemosa</i>	0.12	9,945
2	Awala	<i>Emblica officinalis</i>	0.13	10,991
3	Behada	<i>Terminalia bellirica</i>	0.48	39,778
4	Bel	<i>Aegle marmelos</i>	0.19	16,225
5	Biba	<i>Semecarpus anacardium</i>	0.07	5,757
6	Bor	<i>Ziziphus mauritiana</i>	0.19	16,225
7	Charoli	<i>Buchanania lanzan</i>	0.21	17,796
8	Chinch	<i>Tamarindus indica</i>	0.05	4,187
9	Dhawada	<i>Anogeissus latifolia</i>	4.41	3,67,427
10	Jambhul	<i>Syzygium cumini</i>	0.15	12,562
11	Karanj	<i>Pongamia pinnata</i>	0.12	9,945
12	Khair	<i>Acacia catechu</i>	0.78	64,902
13	Moha	<i>Madhuca longifolia</i>	0.55	45,536
14	Neem	<i>Azadirachta indica</i>	3.30	2,75,308
15	Palas	<i>Butea monosperma</i>	60.09	50,08,936
16	Shiras	<i>Albizia lebbek</i>	0.03	2,617
17	Sitafal	<i>Annona squamosa</i>	0.02	1,570
18	Tendu	<i>Diospyros melanoxylon</i>	6.29	5,23,923

Medicinal Plants:

A wide range of medicinal plants are found in Yavatmal Forest Division which yield a variety of medicines that are used by the local people. The medicinal plants play an important role in socio-economic, cultural, spiritual lives of local villagers and in conserving biodiversity.

The distribution of medicinal plants is in the entire tract but the present methods of extraction of medicinal plants are not well studied. At present the knowledge about the use of various products of medicinal plants is meager.

Some of the medicinal plants in the division are not identified which require surveys. Studies at macro level do not give a proper picture about most of the medicinal plants. Many medicinal plants appear during the rainy season and if the survey is not carried out in that season, many species of medicinal plants may not appear in the survey report of SOFR because of their life cycle. Moreover most of the field staff do not have knowledge to identify medicinal plants. The field staff are required to be oriented towards medicinal plants in identification, conservation, harvesting, uses and knowledge about lifecycle. It is necessary to impart training to the field staff about such aspects of medicinal plants. The list of important medicinal plants identified in this division is provided in **Appendix No. XXVII** of Volume-II.



7.2 SPECIAL OBJECTIVES OF MANAGEMENT

As per the National Forest Policy, 1988 and 'The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006', the development of Non Timber Forest Produce (NTFP) has been one of the most important objectives in forest management. Therefore, consistent with the above policy and law, the special objects of management is enunciated as below:

1. To protect and manage NTFP yielding species and to utilize the existing potential optimally and to enhance the productivity.

2. To improve stocking of various NTFP species in the forest areas and enhance collection of various NTFPs by improved collection techniques.
3. To ensure enhanced economic returns by training the local communities on value addition techniques and marketability of various NTFPs found in the division.
4. To generate employment and improve the economy of the local people and thereby improve their socio-economic conditions.

7.2.1 OWNERSHIP OF NTFP

The statutory provisions have vested ownership rights over the listed NTFPs species in the village communities in the Scheduled Areas without granting such rights over the trees and the land. Till recently, this list did not include Tendu, the prominent NTFP species in this tract. But after the enactment of 'The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006', even these forest produce have been included in the category of NTFP.

The Seventy-third Amendment of the Constitution of India has brought the NTFPs under the management of the Village Panchayat. NTFPs (MFPs) in the state and its sale procedure can be categorised into two parts:

- i. 33 NTFPs (MFPs) in Scheduled Areas.
 - ii. Other NTFPs (MFPs) excluding 33 NTFPs in Scheduled Area and NTFPs in Non Scheduled Areas.
- i. 33 NTFPs in Scheduled Areas:**
- i. Government of India passed the Provisions of the Panchayat Extension to the Scheduled Areas in 1996. In pursuance to this, Government of Maharashtra passed Maharashtra Act No. XLV of 1997, "Maharashtra Transfer of Ownership of Minor Forest Produce in the Scheduled Areas and the Maharashtra Minor Forest Produce (Regulation of Trade) (Amendment) Act 1997."

ii. As per 1997 amendment, for 33 Minor Forest Produce found on Government land in Scheduled Areas, ownership lies with Gram Sabha.

ii. Other Non Timber Forest Produce (excluding 33 NTFPs in Scheduled Area) and NTFPs in Non Scheduled Areas:

1. Revenue & Forest Department, GoM, Government Resolution dated October 5, 2011, confers the rights of NTFP collection, processing and sale to the JFMCs. Therefore, capacity building of JFMCs is crucial for realising the potential of harnessing employment generation to JFMC members and additional income to the committee to further invest in the development of NTFPs.

2. Forest Rights Act, 2006 confers the rights over NTFPs to the community right holders. Therefore, in areas where the CFRs (involving NTFPs) have been vested with village communities, in such areas, the process of NTFP collection, processing and sale has to be initiated by that community.

3. Excluding the above-mentioned areas, DCF can form NTFP units and put them for auction. However, a mechanism has to be evolved to regulate excess harvesting.

7.2.2 NTFP COLLECTION

Though a few species are identified there is huge lacuna in the quantum of availability, collection and sale of the products. There may be many other forest species which yield various products or leaves, flowers, fruits etc. which are of some use for medicinal purposes. However, systematic information in this respect is not currently available. Such NTFPs should also ideally find their due place in the JFM micro-plan. Proper grading, value addition and exploring new markets for the traditional NTFPs (such as gum), shall be included under the JFM programme of the division.

7.2.3 METHODS OF TREATMENT

Documentation of NTFP Collection: The beat guards shall send monthly reports to the Range Forest Officer on the quantity of NTFPs collected in their beats. The Range Forest Officer shall compile and send the detailed report, mentioning the quantity as well as the market price, to the division office. The Division Office thereafter shall compile the figures for each species for Division with a view to monitor the collection and to enhance the productivity of these NTFPs. Involving JFMCs in this exercise would be beneficial as they are the major stakeholders in collecting, processing and selling NTFPs. To capture such information with uniformity, suitable printed registers be supplied to all JFMCs through the division office.

Vandhan Jandhan Outlet: Vandhan Jandhan outlet is established at Yavatmal range in Yavatmal Forest Division and produces of NTFP species are sold through this platform. JFM Committees of Bhoyar, Chicnchbardi and Ichori are actively involved in collection, processing and sale of NTFPs. More such outlets can be established in the Division.

Fire Protection Measures: Collection of NTFPs is often associated with forest fires, because the villagers set fire around the NTFP yielding trees for clearance of leaf litter and undergrowth. Fires are also caused by agents of Tendu contractors under the belief to get better flush of Tendu leaves. If it is left unattended, such fires spread into forests as forest fires. Additionally, the following measures shall be undertaken.

- The Village Panchayats and Forest Protection Committees shall be involved in awareness generation programme to help control forest fires.
- In case of forest fire, legal action shall be taken against the defaulters. Strict vigilance is necessary during the months of February-April to check the spread of fires specially during the Tendu and Mahua flower season.

The treatment to be given will be different for different types of NTFPs. Therefore, each NTFP will have separate treatment as follows.

Management of Tendu:

Collection of Tendu Leaves: Tendu is the prominent revenue generating NTFP of this tract. Tendu leaves are used for manufacturing bidis. Tendu trade has been nationalised by the Government of Maharashtra Act No. LVII of 1969. Tendu leaves were collected by the department through agents till 1990 season. During the 1991 season Tendu units were sold on lump sum basis. The collection of Tendu leaves commences from the last week of April each year and continues up to first week of June. Quality of leaves is a major criterion for bidi manufacturers. The quality depends on the colour, texture and presence of nodules and veins. The best quality leaves are those ranging from ashy to palest hue; Almond colour is also prized shade. Leaves with leathery texture either too thick or thin are good quality for making Bidi. The leaves are collected at various collection centres called phadies. The leaves (pudas) are dried and then packed in gunny bags. The quantity is measured in standard bags.

- Tendu leaf collection is governed by the policy of the State Government in conjunction with various laws presently in force.
- Tendu leaf collection is an income generating activity for most local and tribal villages in the region. The local village communities shall be engaged in Tendu collection in the Division to support their livelihood.
- Pruning of young Tendu plants does help in increasing leaf yield. Saplings having more than 5 centimetres collar diameter shall not be pruned.

Tendu Regeneration:

In view of importance of Tendu to support the livelihood of forest dwelling communities and its economic value for the region, sustainable management and use of Tendu is prescribed to be given added focus.

- Maintenance and improvement of Tendu in the forest crop composition is prescribed by ensuring regeneration of Tendu and its subsequent protection.

- Singling of shoots and soil working around Tendu seedlings is prescribed in the plantation and rootstock areas to promote growth of Tendu seedlings along with the annual coupes in area-specific working circles.
- Tendu regenerates through root suckers. Hence, young root suckers should be identified and aided for creation of congenial growth conditions such as cleaning of bushes, protection from fire etc.

Year wise production of revenue obtained for the last 10 years is given in **Appendix No. XXVIII**. In order to increase the production of Tendu, pruning and pollarding of tendu trees are carried out every year to get good flush of tendu leaves. No other scientific efforts are made to improve the production of tendu. Sometimes local people ignite fire to forest to get good flush of tendu leaves which causes adverse impact on regeneration.



Formation of units:

The entire division is divided into 10 tendu units and which are constituted for the purpose of regulation of trade of tendu leaves under its Forest Produce (Regulation of Trade) Act 1969 vide its No. MFP 2182/240911/F-1, dt. November 19, 1983 of Government of Maharashtra. The list of tendu units formed in this Division are given below.

TABLE NO. 7.2: TENDU UNITS

Sr. No.	Range	Unit Name
(1)	(2)	(3)
1	Jodmoha	Jodmoha
2	Wadgaon	Wadgaon
3	North Arni	Borgaon
4	Hiwari	Hiwari
5	Yavatmal	Yavatmal
6	North Arni	Lonbehal

Sr. No.	Range	Unit Name
(1)	(2)	(3)
7	South Arni	Sawali
8	Darwhaa	Darwha
9	Ner	Ner
10	South Arni	Sawali PESA

Management of Gums:

Gum is an important NTFP and is exuded by plants, partly as normal phenomena and partly as the result of disease or injury to the bark. Wood Gum is a substance of more or less sticky nature. Dhawda (*Anogeissus latifolia*) is the main source of gum in the area. These gums are used in medicines, chemicals, cosmetics, food industries and incense. Dhawda gum is used in the food industry for making sweets. It may also be suitable in the manufacture of elastic adhesive, lacquers, oil cloth compositions, ink and perfumery.

Previously gum units were operational in this division, but because of operational difficulties and reduced availability of source trees, they have become dysfunctional over time. Locals in few pockets continue to harvest gum, using traditional methods. Staff, through the means of JFMCs, should ensure that the scientific ways of gum tapping should be adhered to.

Tapping rules:

The tapping rules of gum derived by the FRI, Dehradun are as follows:

1. The tapping season shall commence from November to end of May each year.
2. Tapping shall be confined to the main bole of trees between 15 cm from ground level to the point from which first branch is given off.
3. Only trees above 90 cm in girth at breast height shall be tapped.
4. Each tree shall be tapped continuously for 3 years and shall be given rest for 3 years thereafter. The second tapping cycle will begin in the 7th year after the

commencement of tapping season and will continue for another period of 3 years.

5. The initial blaze of 20 cm width and 30 cm in length or height may be made on trees in the month of November. The blaze is made 0.6 cm deep in the bark. Blaze may be made horizontally leaving equal space between two blazes.
6. The gum starts oozing out soon after blaze is made and may be collected after a month, i.e. about December. Subsequent collection and freshening may be done fortnightly up to May. Thus 12 freshening may be required to be made during the year.
7. The lowest row of blaze will be at 1 m above the ground level. The next row of blaze will be made at the height of 60 cm from the lower i.e. at a total height of 1.6 m from the ground level, the vertical portion of the blaze of upper row will alternate with similar portion of the row and no 2 blazes of the two rows will be directly one above the other.
8. The number of blazes to be made on each tree will depend on its girth at breast height as given in the following table.

TABLE NO.7.3: NUMBER OF BLAZES ON TREE FOR GUM

Sr.No.	Girth at Breast Height (in metres)	Maximum no. of Blazes to be made on each Tree
(1)	(2)	(3)
1	0.9 to 1.3	2
2	1.3 to 2	3
3	2 to 3	4
4	Over 3	1 blaze for every 45 cm girth in addition to category 3 above.

No fresh blaze will be made on the partially healed up surface or old wounds. Each blaze will be in a shape of parabola with a 2.5 cm side base. The curved side of parabola will be upwards and of height not more than 7.5 cm and depth of the blaze shall not exceed 0.6 cm in the wood. At the end of the season, the height of the blaze shall not be greater than 12.5 cm. Maximum permissible dimension of each blaze shall be 10X12.5X0.6 cm in width, height and depth respectively.

Since the tapping is to be done continuously for 3 years the total height of blaze at end of 3 years of tapping will be 37.5 cm the width and depth remaining the same. In the second cycle i.e. in the 7th year (after 3 years rest) new blazes will be made in the same way in the unblazed portion, in between the blazed portion of the first cycle. This blazing will continue for another 3 years in the manner described above and operation will be repeated till unblazed is fully covered.

The “Drill method” for gum extraction may also be carried out for better gum production. The methodology is as follows.

- The tapping season commences from November and remains until the end of May each year.
- No tree below 90 cm in girth will be tapped.
- Drills of 2 to 3 cm depth (slightly slanting towards base) are made at a spacing of 20 cm at breast height. A tree of 120 cm will have 6 drill holes.
- 1 ml of ethephon (39%) will be injected in each hole.
- Within 4 to 5 hours of ethephon injection, Gum oozing commences.
- Gum can be harvested as clumps every 15 days.

7.2.4 MANAGEMENT OF HIRDA, BEHEDA, AONLA, CHAR AND OTHER NTFPS

Collection of Hirda, Beheda, Aonla, Char and other NTFPs:

Fruits of Hirda, Beheda, Aonla and Char are marketable items. Similarly, fruits, flowers and leaves of certain shrubs and trees are used for variety of

purposes. Current level of collection is quite erratic and therefore, poor indicator of their potential in the tract.

Collection of species, which are not covered under the monopoly procurement by government agencies, should be allowed by the Joint Forest Management Committees or Village Panchayats for better protection of Hirda, Beheda, Aonla, Char trees and to increase its stock, few of the above trees be numbered and these trees be allotted to members of JFM committee. The members of committees who have been assigned should protect and nurture these trees. Range Forest Officer is supposed to monitor this activity of JFM committee regularly and make proper documentation.

Removal of NTFPs shall be within the sustainable limits of production. Felling of trees and lopping of branches shall not be permitted for NTFP collection. Destructive removal shall not be permitted, in any case. Digging up of plant roots, branch cutting, debarking on a plant will be considered as destructive removal.

Regeneration of Hirda, Beheda, Aonla and Char:

Required tending is prescribed where saplings of Beheda, Aonla and Char are found in worked coupes, to remove congestion. Soil working and mulching are prescribed along with planted seedlings and to be done during coupe operations of various areas in working circles. Atleast 10% of species taken up for plantations shall be of NTFP species. Hirda, Beheda, Aonla and Char are prescribed for plantations.

7.2.5 FUTURE INTERVENTIONS

The NTFP management on sustainable basis has remained a complex process for the last several decades but in the present scenario, there is a need to adopt multipronged strategy, as under, to build up an environment to strengthen community based management and trade of NTFPs which in turn would strengthen the livelihood of forest dependant population.

Resource Augmentation:

Due to unrestricted and unscientific collection and over-use, NTFP resources have greatly depleted over years while their regeneration has declined. Special efforts are required for reducing the pressure on forest by cultivating selected species and undertaking intensive conservation of existing forests supported by Natural Regeneration and other conservation activities. One of the important strategies for resource generation is conservation, development and harvesting methods which is an integrated approach from conservation and production to the end use.

Undertaking in situ conservation measures for NTFPs including protection and Assisted Natural Regeneration (ANR) to reduce resource depletion and reviving endangered NTFPs is required. Conservation of all genotypes including RET species, development and sustainable harvesting with locally feasible models of community participation. Additionally, cultivation and plantations of NTFP can be promoted in private lands, lands with gram panchayat to reduce the gap in demand and supply. Special efforts are required for all activities of NR, ANR, nursery raising, plantations and tissue culture etc.

Detailed Inventory and Prioritization:

NTFP sector is majorly unorganized. There is no comprehensive information available on most of the NTFPs. Most of NTFP species are of medicinal value and are in active trade. Only few species are recognized and traded while very little data is available at the division level. Since NTFP collections are seasonal and may vary from year to year it is difficult to provide demand and supply data until a dedicated system prevails. The first priority would be to prepare a base line data. A first-hand knowledge towards the identification of species should be available at a beat level. Hence a compartment wise inventory of the species, quantity, mature trees available, their production potential and quantum collected needs to be documented. Attributes such as species wise availability, season of harvest, economic part, cultivation status, quantity which is self-consumed, value added and

traded also needs to be documented. Range wise species prioritization and selection for conservation, development and harvesting of important NTFP species, demand and supply for NTFPs needs to be determined. All such information needs to be developed on GIS platform for better management.

Forward and Backward Linkages:

Traditionally the whole NTFP sector, particularly its collection, trade and local value addition are managed in an unsystematic and unorganized manner. JFM committees, Gram sabhas and Panchayats were given some responsibilities for NTFP management but are still not in a position to independently and successfully handle the overall management of NTFP. Most NTFPs are biological and seasonal products where several produce are perishable and require immediate disposal. In most places the primary collectors do not have proper storage facilities. Hence, primary collector is vulnerable to sell at a low price.

In this Division a few species can be identified based on the availability. For each prioritized species, value chain analysis and development needs to be carried out followed by need based infrastructure development, processing facilities, standardization, certification, enterprise development, purchase and selling, arrangements for working capital/loans etc. Importance should be given to those species which come under RET (rare, endangered and threatened) categories. There is a need to involve financial institutions to promote community based micro-enterprises with clear benefit sharing mechanisms. Involve financial institutions like public sector banks in NTFP enterprise development. Apart from the above, the following aspects can be considered for NTFPs.

1. Minimum support price (MSP) for NTFPs: Ministry of Tribal Affairs, Government of India has announced MSP for certain NTFPs such as, Karanj Seed, Mahua Seed, Sal Leaf, Sal Seed, Lac (Rangini and Kusumi), Chironjee, Wild Honey, Myrobalan, Tamarind, Gums (Gum Karaya), Kusum Seed, Neem Seed, Puwad Seed, Baheda, Hill Broom Grass, Shikakai, Guggul (exudate),

Bael (dried and without crust), Nagarmotha, Palash Kesuda (flower), Shatavari (dried), Madhunashini, Kalmegh, Tamarind (de-seeded).

2. Mechanism for market intelligence and information system.
3. Efficient Certification system for improved trade.
4. Revolving Fund or similar financial support to primary collectors through JFM committees.
5. Better access and benefit sharing mechanism with necessary legal provisions needs to be ensured.
6. Value chain development by aggregation, primary processing, grading, branding and certification. Works initiated by some of the divisions like Gadchiroli may be taken as a reference.

Capacity Building:

Skilldevelopment is very important for the foresters, particularly the field staff, to successfully face the emerging challenges of accommodating community rights in forest conservation, ensuring biodiversity conservation and managing climate change. At the same time, complimentary facilitation should be made for forest protecting JFM committees too in the form of NTFP management protocols. The following aspects need to be taken up for capacity building.

1. Formation and strengthening of local institutions-JFM committees, Self Help Groups.
2. Special training of front line staff and members of JFMCs.
3. Strengthen and restructure existing institutions, particularly public sector procurement and marketing agencies.
4. Modular training for NTFP collector, growers, entrepreneurs and traders.
5. Local, state and national level exposure visits of relevant stakeholders.

Income Generation:

For empowerment of community and sustainable forests a symbiotic relationship between forests and forest dwellers must be maintained in order to provide income for the poor population. Women are mostly dependent on NTFPs due to the nature of its production, quantity, collection procedure, processing and local selling. Better income generation leads to poverty alleviation and women empowerment.

Research and Development:

Research and Development activities in the past were more or less timber centric. Except for few NTFPs such as lac, resin, tendu most have been ignored even though they are highly exploited. There is a need of action oriented R & D in areas of developing new/alternate marketability particularly for low value and high volume NTFPs on the basis of a special drive, post harvesting, semi processing, genetics, management, nursery, plantation, collection, storage, chemical analysis for useful contents, etc. Research is required on biological, social, trade and market and economic dimensions.

R & D focus is also necessary to develop NTFP silviculture, sustainable harvesting protocols, low-cost and user-friendly (preferably women-friendly) value addition techniques and processing machines, eco-friendly and safe storage methods. To develop the NTFP sector in a holistic way a co-ordinated effort between various Government sponsored programmes is necessary.

CHAPTER-8

JOINT FOREST MANAGEMENT

Joint Forest Management (JFM) is a collaborative approach that involves the participation of local communities, forest departments, and other stakeholders in the sustainable management and conservation of forest resources. Under JFM, communities are given a significant role in decision-making processes, implementation of forest conservation measures, and sharing the benefits derived from forests. The objective of JFM is to address the issues of deforestation, encroachment, and degradation of forests by promoting community ownership and responsibility. This approach recognizes the traditional knowledge and practices of local communities, empowering them to actively participate in forest protection, regeneration, and sustainable utilization of forest products. JFM has proven to be an effective strategy in several countries, fostering a sense of ownership, enhancing livelihoods, and promoting the conservation of forests and their biodiversity. Through JFM, communities become the custodians of their local forests, leading to a more sustainable and equitable approach to forest management.

8.1 SPECIAL OBJECTS OF MANAGEMENT

1. To strengthen and empower local institutions for protection and conservation of forests and wildlife resources through peoples' participation.
2. To increase the vegetation cover and to carry out soil and moisture conservation works with the active co-operation of local people.
3. To involve local people in forest protection to generate sustainable employment.

8.2 RANGE WISE FORMATION OF JFMCs

In Maharashtra, JFM committees are guided by the Government of Maharashtra Resolutions dated March 16, 1992, October 5, 2011 and July 10, 2012.

In Yavatmal Forest Division 251 JFM committees have been established till 2022. The details are given below.

TABLE NO.8.1
RANGE-WISE DISTRIBUTION OF JFM COMMITTEES

Sr.No.	Range	No. of JFMC	Area Allotted (ha)
(1)	(2)	(3)	(4)
1	Darwha	77	11020.88
2	Hiwari	16	4,628.33
3	Jodmoha	30	9,740.15
4	Ner	34	5,362.71
5	North Arni	24	7,006.72
6	South Arni	25	4,936.21
7	Wadgaon	17	5,092.53
8	Yavatmal	28	7,576.84
	Total :	251	55,364.37

As per the Government Resolution, the total number of members in a committee is a minimum of 12 and maximum of 24 with one third members from gram panchayat. 50% of the members should be women and the members from SC/ST and OBC. In the 251 JFM committees there are a total of 1416 members and 59 Memorandums of Understanding (MoU) have been signed. The details of JFM committees is given in **Appendix No. XVI (A), Appendix No. XVI (B) and Appendix No. XVI (C)** of Volume-II.



8.3 BACKGROUND OF JOINT FOREST MANAGEMENT

Degradation of forests is a reality owing to various factors such as over exploitation of forest resources due to heavy biotic pressure caused from illegal

removals from forest, overgrazing, forest fires, loss of top soil due to excessive erosion etc. Rate and magnitude of degradation is directly linked to the involvement of rural communities in the protection and management of forest resources. In the past, local communities enjoyed free access to the forests. With the bringing of forests under Government control through the process of reservation the access to forest resources were substantially regulated. Thus, forest reservation policy came in conflict with the interests of local communities dependent on these forests to meet their basic needs of forest produce for bonafide requirements. Forests were managed as Government property in larger national interest as provided for in the National Forest Policy, 1952 which stated that the use of forests by village communities in their neighbourhood should in no event be permitted at the cost of national interest. Such policy of managing forest only in larger national interests, overlooking the basic needs of local communities did not succeed and forests were degraded as a result of over use.

Forests being a common property resource entails participation of communities in protection and management so that, the belongingness of the community acts as a catalyst for long term forest and wildlife conservation. Therefore, the National Forest Policy, 1988 accordingly provided for creating a massive people's movement for the conservation of forest resources.

The National Forest Policy, 1988 emphasized that domestic requirements of the tribal and other poor people living within and near the forest for fuel wood, fodder, NTFP and construction timber should be the first charge on forest produce and the holders of customary rights and concession in forest areas should be motivated to identify themselves with the protection and development of forest from which they derive benefits. In pursuance to the National Forest Policy, the Ministry of Environment and Forests advised the State Governments to adopt the Joint Forest Management (JFM) approach for the protection and rehabilitation of degraded forest. The Government of Maharashtra vide Resolution No.SIF-1091/199/F-11, dt.March 16, 1992 adopted JFM approach for degraded forest areas. Thereafter, the State Government vide Resolution dt. 25/4/2003, expanded the

scope of JFM to good quality forests also. On October 5, 2011, the JFMCs were provided legal backing by bringing them under the umbrella of Mumbai Gram Panchayat Act 1959. Similarly, to further strengthen the institution of JFM, special schemes have been introduced to reduce the biotic pressure on forest and to improve the success of plantations viz., distribution of LPG/Biogas, distribution of improved cattle in lieu of low yielding cattle, protection of plantations, etc.

JFM is a concept under which Forest department and village committee jointly protect and manage the forests. The starting point of JFM has to be the realization of the need of JFM both by Forest department and the local people. Generally, the scarcity of forest products such as fuel wood, fodder etc. as a result of degradation of forest on which the local communities depended, forces the people to think of steps for the protection and improvement of degraded forests. People are usually reluctant to participate in JFM where sufficient forest areas are still available to meet their requirements. On the part of Forest Department, the challenge to effectively protect forests with limited resources is enormous. The JFM program succeeds where the initiative comes from the people's side and it usually fails where it is forced from Forest Department side as it would only be a Government driven and target oriented program. Villagers themselves are required voluntarily to participate in the program.

Forest Protection Committee (FPC) is to be formed in each village through the resolution of Gram Sabha. Each Forest Protection Committee constitutes a Managing Committee consisting of members elected from general body and with local Forest Guard/Forester as the member secretary. The managing committee is responsible to implement the decisions of general body with regard to the execution of JFM works in partnership with Forest department. Memorandum of Understanding (MoU) is signed between Forest department and managing committee clearly specifying the duties and responsibilities of both parties. Entitlement of FPC members to the share in forest produce is subject to the fulfilment of conditions of MoU.

The members of the FPC will help in protection and development of forests and in return they shall receive share in the usufructs from the forest areas assigned

to such committee. The JFM area shall be managed as per the micro-plan prepared by the JFMC and approved by the DCF. These micro-plans shall contain the details of forest and village development works. This has to be sustainable, should cater to needs of local communities and the same time, the silvicultural requirements of the forest are to be factored properly.

Government of Maharashtra vide Resolution dated October 5, 2011 and July 10, 2012 has issued revised guidelines for implementation of JFM programme. Important provisions of these guidelines are summarized below:

1. JFMC will be constituted by the Gram Sabha through a resolution under the provisions of Section 49 of Mumbai Gram Panchayat Act, 1958. It would consist of 12 to 24 members, of which, at least 50% are women. Representation to SC, ST and VJNT will be as per prevailing Government norms.
2. The ex-officio member secretary of JFMC would be Forest Guard or Forester based on the village population whether it is less than 1000 or more than 1000 respectively.
3. The forest area to be assigned to JFMC would be decided based on parameters such as production potential, available eco-tourist sites etc. through consultative process. In general, forest areas within 3 km of Gaathan would be identified for assignment. Apart from degraded forest areas, even dense forest areas can also be assigned to JFMCs.
4. Memorandum of Understanding (MoU) shall be signed in prescribed format by DCF (T) and JFMC.
5. Micro-plan shall be prepared by the JFMC and should be approved by the DCF. All JFM activities should be taken up as per the approved micro-plan. The micro-plans are to be dovetailed with the broad prescriptions of the approved Working Plan of the division.

6. JFMC is authorized to promote eco-tourism activities in their assigned areas and can levy entry fee and nuisance tax from eco-tourists to preserve these sites sustainably and also generate livelihoods to local people.
7. JFMC is authorized to impose penalties on persons involved in forest and wildlife crimes.
8. RFO and JFMC have to submit an annual performance report jointly to the DCF with respect to the responsibilities assigned and achievements of the committee.
9. The JFMC would be eligible for usufruct sharing from intermediate and final felling as per working plan if the responsibilities thrust on the committee are executed for a period of five years. However, in case of bamboo, yield from dense areas/degraded areas, the same would be available to JFMC soon after execution of MoU and upon protection of bamboo for 3 years respectively. All removals would be as per the provisions of approved Working Plan.
10. In case the JFMCs do not perform the responsibilities assigned to them, the DCF is authorized to dissolve such committees by applying the principles of natural justice.
11. Non forest land available in the village can be included in the JFM programme if the Gram Panchayat agrees to do so.
12. To reduce the biotic pressure on forests for fuelwood, Government of Maharashtra vide Resolution dated July 10, 2012 has launched schemes for distribution of LPG/Biogas connections on 75% subsidy. Similarly, to reduce grazing pressure, distribution of improved breed of cattle in lieu of disposal of low yielding cattle has been introduced on 50% subsidy. To improve the performance of plantations, scheme for plantation protection through financial incentive has been launched.

8.4 CRITICAL ANALYSIS OF JFM

Yavatmal Forest Division has a total of 251 JFM committees in the forest fringe villages. The total area allotted for these committees is 56,425 hectares. This covers around 68% of the total area of the division.

The area is overburdened with heavy human and cattle population leading to high biotic pressure resulting in degradation of forest areas adjoining habitations. These forests are required to be regenerated through intensive protection and development of rooted stock and natural regeneration. Natural regeneration should be supplemented with artificial regeneration with the active involvement and cooperation of the members of JFM committees. Areas generally degraded with density less than 0.4, open forest with eroded soils are included for JFM activities. JFM committees have taken up plantation activities to the extent of 437 hectares during the previous plan period.

Maharashtra forest department has issued guidelines for grading of JFM committees into A, B and C categories based on various criteria of performance. Based on this, of the 251 committees, 86 committees, 116 committees and 49 committees have been graded into A, B and C category committees respectively. General Body meetings and executive committee meetings of JFM committees are conducted periodically. The overall attendance in General Body meetings is 60% and that of Executive Committee meetings is 80%. During these meetings various resolutions pertaining to the concerned JFM committee are approved. Various registers are also maintained at the committee level.

Sant Tukaram Vangram Yojana Award is granted to best performing JFMCs at the district and state level. Certain JFMCs from Yavatmal Forest Division during the previous plan period have won these awards. Details are as follows:

TABLE NO. 8.2: SANT TUKARAM VANGRAM YOJANA AWARD WINNING JFMCS

Sr.No	Year	JFMC	Range	District Level Standing
(1)	(2)	(3)	(4)	(5)
1	2012-13	Manpur	Hiwari	Third
2	2013-14	Saikheda	Wadgaon	Second
3		Bodhgavan	Yavatmal	Third
4	2014-15	Loni	North Arni	Second
5	2015-16	Satara	North Arni	Second
6	2016-17	Deulgaon (Walsa)	Darwha	Second
7	2017-18	Satara	North Arni	First
8		Taslot	Jodmoha	Second
9	2018-19	Waraj	Yavatmal	First

8.5 POTENTIAL AREAS FOR JFM

The following areas will be suitable for JFM program.

- Areas prescribed under the Afforestation Working Circle.
- Areas under Fodder Management Working Circle are also proposed to be included in JFM.
- Regeneration and protection of NTFP areas and collection, grading, value addition and marketability of various NTFPs in the division are proposed to be given focus for working under JFM program.
- Villages which are adjoining potential eco-tourism sites are proposed to be included in JFM programme.
- All potential wildlife areas are to be included in either JFM or EDC programme as per provisions contained in Government Resolution.

8.6 MANAGEMENT OPTIONS FOR FOREST

The concept of Joint Forest Management is to be accepted as important strategy for ushering in an era of sustainable rural development. The present on-going approach needs to be modified in such a way that local villagers develop a sense of “belongingness” to the existing forest and other natural resources. Overall management of the natural resources should be directed towards raising the general standards of the common masses, which would ultimately lead to the sustainable community development. The following measures need to be incorporated to bring fresh air in JFM and, this kind of timely appropriate remedial measures shall make forest management more effective;

- i. **Entry Point Activity:** The entry point activity shall wholly contain the distribution of plants to be grown in kitchen garden or agricultural fields like *Moringa olifera* (drumstick), *Mangifera indica* (mango), *Emblica officinalis* (amla), *Citrus limon* (lemon), *Psidium guajava* (guava), *Murraya koenigii* (kadipatta), etc. The main objective of this intervention is to provide nutritional supplements to family members through these plants. Other activities which suits local requirement and meets the need of village and fulfil the spirit of forest management may be permitted. It has been noted that if a village is approached with an entry point activity and an investment package in the name of JFM, people start losing interest in the whole process once that input package is over. This ultimately reflects on the sustainability of the entire programme. If the villagers are themselves not ready for a change then sustainability of any rural development programme or poverty alleviation programme cannot be ensured only by pumping in funds in the name of development projects or schemes, etc. If people are to develop a genuine interest in the whole development process, the initiative should come from within the village itself. The expectations of the villagers should be kept low.

ii. **Soil and Moisture Conservation Works:** Soil and moisture conservation works shall be taken up as per the 'Ridge to valley' concept. The essential principle will be to conserve maximum rainwater within the village itself to recharge the groundwater table. Villagers must be educated and motivated to participate for conserving soil and moisture with the help of JFM.

iii. **Afforestation on Forest Lands:** The Afforestation activities on forest lands will include:

- a) Natural Regeneration
- b) Assisted Natural Regeneration
- c) Artificial Regeneration
- d) Bamboo plantation
- e) Grass and fodder plantation

These afforestation programmes should be done with the help of JFMC as per prescriptions of Working Plan to maintain ecology and also for gaining economic gains for benefit of village by means of planting NTFP species.

iv. **Plantation on Outside Forest Area:** JFMC should vibrantly participate to increase vegetation cover not only in forests but also outside the forests. In this activity Social Forestry wing of the Forest department will give necessary assistance for plantation.

- **Block Plantation on Village Common Land:** The preference shall be indicated for raising combination of short and long rotation forestry species of NTFP values like Tamarind (*Tamarindus indica*), Jamun (*Syzygium cumini*), Bamboo, Kadipatta (*Murraya koenigii*), Triphala species (Hirda, Behada, Amla), etc. so that these plantations will provide sustained revenue to the village panchayat.

- **Linear Plantations:** All roads within the village and other connecting roads shall be planted under the roadside plantation program. In conjunction with roadside plantation other linear features like canals, streams, rivers, railway line, etc. plantations shall be carried out with co-ordination of concern department. Involvement of Social Forestry Department along with JFM will prove to be a booster for these plantations.
 - **Bamboo Plantation on Agriculture Land:** There are two schemes that are implemented by the Maharashtra Bamboo Development Board. They are Atal Bamboo Samruddhi Yojana (a State Scheme) and Plantations under National Bamboo Mission (a Central Scheme). More beneficiaries from the selected JFM villages should be included under these two schemes.
- v. **Distribution of LPG:** One of the important reasons for forest degradation is the dependence of local people on firewood from forests. Therefore, to reduce such dependence, GoM vide resolution of July 10, 2012 decided to distribute LPG connections to forest fringe villages. JFMCs have played a key role in implementing this scheme. Efforts should be made to extend this scheme to all JFM villages. The JFM villages should also be covered with other source of efficient fuel management like Improved Chulhas with help from the Maharashtra Biodiversity Board. Detailed planning should be made to include beneficiaries in the JFM village through the convergence of the Government of Maharashtra scheme with the Ujwala Yojana of Government of India. Priority should be given for villages which are remotely located.
- vi. **Monitoring and Evaluation:** One very important dimension of this JFM programme is that suitable mechanism needs to be developed for monitoring and evaluation of the JFM programme at regular interval. This periodic monitoring and feedback mechanism would pave way for corrective/ remedial measure in between, which is very much required for sustainable forest management. The parameters selected should be quite simple so that

even local villagers can go on implementing and assessing their impact from time to time. The JFM program will be monitored annually through certain indicators/benchmarks, which are given by Government from time to time. The online monitoring of the JFM program using IT is needed. The use of this application helps in avoiding duplication of work as maximum information is required to be filled merely once and any updates can be made on an annual basis. This will not only help in reducing effort, time and stationery but also improve work efficiency and transparency

- vii. Conflict Resolution:** In the process of sustainable management of forests and natural resources, one can't deny the role of local and dependent communities upon them for their livelihood. These communities have been managing these resources in their own traditional and indigenous ways. The collaborative management of natural resources has increased the number of stakeholders in this sector, which is not limited to the foresters and the villagers. There are many other stakeholders. This has increased the possibilities of conflicts. These conflicts can be divided into two major types; Human-Human conflict and human-wildlife conflict. The JFMC level conflict can be resolved by the JFMC executive body. If the conflict happened between two forest committees or between two different panchayats and JFMCs then the concerned Range Forest Officer would be responsible for the resolution of the conflict. If the conflict is between the JFMCs of two varied ranges then the Deputy Conservator of Forests, Yavatmal should resolve the conflicts. The appeal, for all decisions mentioned, should be made to Conservator of Forests (Territorial), Yavatmal. In regulating the Human-Wildlife conflict, the empowerment of the communities to handle conflict situations and creating awareness about the importance of wildlife and its conservation is necessary. The communities need to be exposed to precautions and safety measures to protect themselves and also the wildlife.
- viii. Maintenance and Corpus Fund:** A majority of forest development activities in the State are undertaken with the support of externally or internally

supported projects. After the completion of the Project, necessary arrangements for maintenance of assets created under the Project are unavailable. It is, therefore, necessary to establish a fund that can be used in the post-project period for the maintenance of project assets, and also help in the implementation of the statutory working plans including micro plans.

- ix. **Self Help Groups (SHGs):** JFMC can come up with several income generation activities for alternative livelihood especially for low-income groups of the community. They can form SHGs and the front-line staff of the forest department can assist them to establish the groups.
- x. **Training on Livelihoods:** Once a JFMC is established, it should be exposed to diverse training programs to enhance the skill and capacity of the members for the holistic development of the area. The different capacity building training programs which the JFMC members should undertake, would be; Hands-on training on cultivation of NTFPs, medicinal plants, enhancing agriculture productivity through rainwater harvesting, introduction of alternative energy sources, pasture development for fodder, and plantation of fruit trees/orchards, training on animal husbandry and poultry farming, etc. and other government schemes from time to time.
- xi. **Convergence:** To make the JFM program successful, a well-planned convergence of various schemes under CSS, State plan, District plan, etc., need to be carried out. These convergence plans need to be implemented in a time-bound manner. Exposure visits enable the JFMC members to interact with and learn from other successful examples of JFMC. It allows them to view practical examples of successful integration of sustainable practices in JFM like their own. They are integral to sensitizing the JFMC members to practices of sustainable forest management.

8.7 VILLAGE FORESTS

“Village forests” or “Gram Van” means such part of reserved forests or protected forests in the village as assigned to the Village Panchayat under the Indian

Forest Act, 1927 and the Village Forest Rules 2014 and also under the Maharashtra Village Panchayats Act 1959 for management through Joint Forest Management Committee. The JFMC shall manage its village forests on behalf of the Village Panchayat with due reference to the relevant provisions of the Panchayats (Extension to the Scheduled Area) Act, 1996, the Maharashtra Minor Forest Produce (Regulation of Trade) (Amendment) Act, 2006, the Indian Forest Act, 1927, the Wildlife (Protection) Act, 1972, the Biological Diversity Act, 2002, the Maharashtra Village Panchayats Act, 1959, and rules made thereunder and any other law in force as applicable to the State of Maharashtra.

8.8 MAHARASHTRA VILLAGE FOREST RULES, 2014

In exercise of the powers conferred by sections 26, 28, 30, 32, 34 and 76 of the Indian Forests Act, 1927 (Act No. XVI of 1927) and all other powers enabling it in that behalf, the Government of Maharashtra has notified the Village Forest Rules on May 13, 2014. The salient aspect of these rules is mentioned below:

1. JFMCs fulfilling the criteria of zero encroachment, positive rate of natural regeneration, effective control of forest fire (area burnt not more than 5 % in last three years), over 60% survival in plantations raised in the said area at the end of fifth year, effective implementation of “charaibandi” and “kurhadbandi” are eligible for assignment of village forests if atleast three criteria are fulfilled.
2. The village forests assigned to the village community or the Village Panchayat shall be managed by a committee called as the “Van Vyavasthapan Samiti” or the Village Forest Management Committee.
3. “Van Vyavasthapan Samiti” has to prepare “Ten year micro-plan” by dovetailing with the Working Plan of the landscape and an “Annual implementation plan” every year for managing the village forests and place the micro-plan before the GramSabha for ratification and its approval by the ACF and revise it periodically.

8.9 GENERAL PRESCRIPTIONS

- For those JFMCs whose micro-plans have expired, new micro-plans shall be prepared through the process of Participatory Rural Appraisal (PRA). Micro-plans are to be dovetailed with the prescriptions of the approved Working Plan.
- Silvicultural management, maintenance of forest boundary, removal of forest encroachment and control over illicit felling, illicit grazing and fire should receive high priority.
- Gradations of JFM Committees into A, B and C categories is being done. Efforts should be taken to improve the JFM Committee and upgrade them from C category to B and B category to A.
- Forest protection cannot be viewed in isolation. The works depicted in the micro-plans should be reflected in the planning process of the Gram Panchayat.
- Wherever required, NGOs should be involved for creating awareness programmes.
- Documentation of successful initiatives under the JFM approach must receive importance at the range and division level. A compilation of works undertaken in JFM villages in a financial year should be done at division level and published. This work should be given wide publicity in print and electronic media.
- JFM programme should be implemented with complete transparency. The accounts of JFMCs shall be annually audited as per Government instructions and a copy of such audited statement shall be shared with Gram Panchayat. All payments to JFM members shall be made either through account payee cheques or RTGS transfer or depositing directly into respective bank accounts. Payments through cash shall be strictly discouraged.

- As far as possible, all works are to be executed by JFM members only. Monitoring of JFM activities by supervisory cadres (ACF to CCF) is the key for effective implementation of JFM programme. Periodic reviews at various levels will aid in good implementation.
- Often, there is thinking in the grassroots level functionaries that, JFM has to be implemented only if funds are allotted to a village. This notion is detrimental to the core values of JFM. Therefore, the supervisory officers should strive to bring suitable awareness among the grass root functionaries (FG to RFO) to change attitudes and mindset.
- Dedicated NGOs/Civil society groups can aid the village communities in strengthening JFM institution. Their services can be utilized by the department in areas of capacity building of JFMCs in micro-planning, community motivation, eco-tourism initiatives, evolving models for enhancing livelihoods etc.
- Periodic evaluation of JFMCs should be done to identify performers and non-performers. While performing JFMCs should be rewarded, the non-performers should be given opportunity for improvement.
- One of the important reasons for forest degradation is the dependence of local people for firewood from forests. Therefore, to reduce such dependence, Government of Maharashtra vide resolution of July 10, 2012 decided to distribute LPG connections to forest fringe villages. JFMC's have played a key role in implementing this scheme. In the division, 268 families have been distributed with LPG connections. This includes 151 SC beneficiaries, 0 ST beneficiaries and 117 from the open category.
- Measures being taken for reducing human wildlife conflict (described in 8.11.1 of Vol. I) should be continued with active involvement of JFMCs.

CHAPTER-9

MAINTENANCE AND ENHANCEMENT OF FOREST HEALTH AND VITALITY

Forest health refers to the overall well-being of forests, including the condition of trees, biodiversity, and ecological processes. A healthy forest is characterized by the presence of diverse and robust tree species, thriving understory vegetation, and a balanced ecological community. Forest vitality, on the other hand, refers to the resilience and ability of forests to adapt and withstand various stressors such as climate change, pests, diseases, and human activities. Forest health and vitality are closely intertwined, as a healthy forest is more likely to exhibit vitality and better withstand disturbances.

The maintenance of forest health and vitality is essential for the overall well-being of ecosystems and the numerous benefits they provide. However, forests face various threats that can significantly impact their health and sustainability. Illicit felling, often driven by illegal logging activities, poses a severe threat to forests worldwide. It not only leads to the loss of valuable timber resources but also disrupts the ecological balance, destroys habitats, and contributes to deforestation.

Encroachment, another significant threat, occurs when human settlements or agricultural activities expand into forested areas. This encroachment results in habitat fragmentation, loss of biodiversity, and increased pressure on forest resources. Fire is a natural ecological process in forests, but when uncontrolled, it can have devastating effects. Uncontrolled wildfires, often exacerbated by climate change and human activities, destroy large forest areas, endanger wildlife, release vast amounts of carbon dioxide into the atmosphere, and increase the risk of soil erosion.

Grazing, particularly by livestock, can also pose a threat to forest health. Overgrazing can lead to soil degradation, erosion, and a decline in the regeneration

of native plant species. Livestock can trample vegetation, disrupt wildlife habitats, and introduce invasive species, further compromising the vitality of forests.

The forest of this division is under pressure of illicit felling, encroachment, grazing and fire because of excessive biotic pressure of the adjoining villagers and nature of vegetation, climate and social factors.

9.1 SPECIAL OBJECTIVES OF MANAGEMENT

1. To protect the forest from illicit felling, encroachment, fire and grazing.
2. To sensitize local people about forest protection and involve them in preventing forest offences with their cooperation.
3. To raise the morale of field staff and strengthen their capabilities to deal with forest offences using modern technology.

9.2 PROTECTION STRATEGY

The strategy to be adopted to protect forest is of integrated approach by undertaking collective measures based on situation and time. The strategy shall be direct field oriented in a participatory manner with active involvement and co-operation of local people especially members of Joint Forest Management committee. Some of the strategies proposed are:

- Existing forest needs to be well protected and developmental works such as soil and moisture conservation measures, natural and artificial regeneration works and other cultural operations shall be carried out in order to increase the productivity of the forests.
- Creation of database regarding forest offences at division and range level. This data should be available on GIS platform for better planning, monitoring and implementation of activities regarding forest offences.
- Regulation of grazing and controlling forest fire.

- Seeking cooperation and active participation of local people in all operations of forest management especially JFM committee members.
- Employment generation to local people during lean period.
- Fulfilling the demands of local people for forest produce.
- Effective utilization of existing infrastructure, strengthen and updating infrastructural facilities.
- Installation of new check nakas at hypersensitive and sensitive points apart from existing check nakas.
- Improvement in communication facility and mobility of the forest staff.
- Patrolling sensitive forest areas along with the local people/Joint Forest Management Committee members.
- Introducing rewards based informer system and transforming forest offences into high risk low gain activities.

9.3 PROTECTION MEASURES

A protection plan is to be prepared at division level in January of every year for taking strict protection measures as per GR dated August 13, 2014. Protection plan shall cover the following issues.

- All beats of the division are considered as hypersensitive beats.
- The DCF shall prepare an annual program for beat inspection. It must be ensured that all the beats in the division shall be inspected once every 6 months. In a year, RFO shall inspect all the beats under his jurisdiction and in a month he shall inspect at least one beat in his jurisdiction. If any serious offence has been detected, the concerned ACF shall re-inspect that beat. Apart from this, DFO (Vigilance) shall inspect the coupes randomly within the division.

- During beat inspection apart from forest offences, forest boundaries, pillars, records of beat guard, POR book, beat map, topo sheet, diary, uniform, GPS, mobile, PDA shall also be examined. Proper use of GPS and PDA shall be ensured.
- After every quarter, the DCF shall review and analyse the beat inspection reports, and appropriate measures and instructions shall be given to the field staff accordingly.
- Office inspection must be carried out regularly. RFO should inspect round office once in 3 months, while ACF should inspect round office once in 6 months. Range office shall be inspected by ACF and DCF once in a year.
- Saw mill inspection shall be done by RFO (minimum 8 saw mills per month), ACF (minimum 4 saw mills per month), DCF (minimum 2 saw mills per month) and CF (as and when required).
- DCF, ACF, RFO should ensure that all offence cases registered should be brought to a logical conclusion. All cases in court should be regularly monitored and review should be taken. Help should be taken from the legal advisor in the o/o CF for all required cases.
- The CF/DCF shall also organize meetings with officers of the adjoining divisions regarding forest protection. They should also ensure proper coordination between Police and Revenue officials.
- At the division level, a control room should be operational that shall work 24/7.

9.4 ILLICIT FELLING

Illicit felling is a major problem in this division. The forests areas near the border of Telangana and along border of Nanded district are sensitive from the point of illicit felling. To have effective protection regular patrolling needs to be undertaken.

Patrolling:

Regular patrolling is essential in all sensitive areas to control illicit felling. Separate day and night patrolling around sensitive areas, roads leading from forest to towns shall be carried out. A register should be maintained at range office regarding patrolling team, time and duration. ACF should supervise patrolling and involve in patrolling once in a month. Patrolling should include inspection and regular checking of waterholes. Joint patrolling with JFM committee members along with staff of adjoining range, round and beat, should be taken up. During patrolling, weekly markets shall be monitored for prevention of illegal trade of NTFP and wildlife parts and products. Analysis of offence cases reveals that the following beats need intense patrolling.

TABLE NO.9.1: BEATS REQUIRING INTENSE PATROLLING

Sr. No.	Range	Beats
(1)	(2)	(3)
1	Yavatmal	Kita, Jambhulni, Waraj, Borgaon, Talegaon, North Umarda, South Umarda.
2	Wadgaon	Pandhari, Kolambi, Wadgaon, Chichghat, Balajinagar, Saykheda.
3	Jodmoha	Metikheda, Potgavan, Nanza, Markanda, Watbori, Chaparda, Dongarkharda, Pahur, Mendhala, Dattapur.
4	Hiwari	Manpur, Kharola, Mandev, Zola, Kinhi.
5	North Arni	Lonbehal, Shendursani, Chandani, Jawala, Shirpur, Deurwadi.
6	South Arni	Palodai, Malegaon, Sakhartanda, Belora, Chatari, Ranidhanora.
7	Ner	Mozar, Ajanti, Lonadi, Ner.
8	Darwha	South Darwha, North Darwha, Lohi, Karajgaon, Khopadi, Ghatkinhi.

Check Nakas:

Check nakas are established at various strategic points to control the transportation of illicit forest produce. Presently there are four check nakas in the division. These check nakas are manned by beat guard and vanmajoor. The Check nakas must be duly notified by competent authority and published for the benefit of public as well as law enforcing authorities. It is required to strengthen existing check nakas with effective controlling force i.e. manpower and modern communication system. Check nakas need to be installed with CCTV cameras for better monitoring of vehicles. The details of status of check nakas is given in the table below.

TABLE NO.9.2: LIST OF CHECK NAKAS

Sr. No.	Range	Permanent Naka	Temporary Naka
(1)	(2)	(3)	(4)
1	Yavatmal	--	Wanwasi Maruti Temple, Arni Road, Wadgaon, Yavatmal
2	North Arni	--	Lonbehal
3	South Arni	--	Anjankhed
4	Darwha	Golibar Chouk, Darwha	--
	Total	1	3

Protection Huts:

Protection huts may be established in sensitive places.

Mobile Squad:

The territorial DCF has been provided with one mobile squad which consists of one RFO, one Forester, four forest guards, van majoor, a police constable, a

driver and a vehicle. Mobile Squad RFO with headquarter at Yavatmal looks after forest protection under the control of DCF, Yavatmal Forest Division. The DCF should closely monitor the work of mobile squad and should obtain weekly reports to monitor the protection activities.

Inspection of Area of Illicit Felling:

The Government has issued various directions and circulars from time to time in relation to dealing of forest offences. The Government has issued GR no. TRS-04/2014/F-6/R and FD, Dt. August 14, 2014. The following time schedule has been provided for inspection of illicit felling areas by respective officers.

TABLE NO. 9.3: INSPECTION OF AREA OF ILLICIT FELLING

Sr. No.	In Situ Value of Illicit Cutting at a Place	Inspecting Officer	Period Within Which Inspection Should be Completed
(1)	(2)	(3)	(4)
1	Up to Rs.50,000	RFO	3 days from the receipt of information
2	Above Rs.50,000 but not exceeding Rs.2,00,000	ACF/ Sub DFO	3 days from the receipt of information
3	Above Rs.2,00,000 but not exceeding Rs.5,00,000	DCF/DFO	3 days from the receipt of information
4	Above Rs.5,00,000	CCF	7 days from the receipt of information

Wireless Network:

Presently there is no wireless network in this Division. In the present day society, offenders possess modern communication systems such as mobile phones while committing forest offences and transport forest produce with ease. The field

staff is provided with mobiles and PDAs for better monitoring. Since mobile network is not available throughout the division wireless network will have an added impact in forest protection. Therefore, it is prescribed that wireless communication system should be provided for effective protection of the forest.

Modern technology such as smart phones, PDA, drones, ect.may be used in detection, prevention and subsequent actions against forest offences. Various applications developed by ITP Cell of Maharashtra forest department can be used.

Mobility of the Staff :

In Yavatmal Forest Division, Government vehicles are provided for DCF, ACF and all RFOs. It has ensured better movement of staff,which enhanced forest protection. Regular maintenance and insurance shall be taken up for all the vehicles in the Division.

Provision of Arms:

Forest offenders are resorting to use modern weapons i.e fire arms in committing forest offences. Government has provided weapons to the staff for forest protection and for self protection. The arms and ammunitions provided to the staff should be put to use as and when required. Field staff should be regularly trained for the use of fire arms. Firing practice should be takenupannually in coordination with the Police Department.

Transit Rules for Forest Produce:

Illegal transportation of forest produce should be checked by concerned staff as well as staff of mobile squad. Special surprise checking and 'nakabandi' shall be organized on major district roads and known routes from the forests to towns through local staff and mobile squad once in a month.

Collection of Information and Intelligence:

The RFO/ Round officers should frequently interact with the villagers to collect information regarding illicit felling, poaching, encroachment etc. through

intelligence network and keep the information in a register under their personal custody. Through this intelligence network, village wise record of habitual offenders must be prepared. Secret service fund provided by the department may be used to the fullest to gather, raid and apprehend offenders involving in forest offences. This fund may also be used for intelligence gathering regarding forest offences.

Rapid Response Unit:

A rapid response unit is needed to quickly respond and attend conflict situations created as a result of human wildlife interactions. The unit should consist of Round officers, beat guards, vanmajoor and be provided with a vehicle which can accommodate a trap cage, equipment, tranquilizing kit, mobile phones, wireless handsets and other necessary equipments. This unit can be stationed at Yavatmal. A special task force can be created to deal with organized gangs engaged in illicit felling, encroachment and poaching. This may include staff of forest, police and revenue department.

9.5 FIRE PROTECTION

The areas of Yavatmal Forest Division are subjected to repeated fires due to heavy biotic pressure and the nature of vegetation and atmosphere due to deciduous nature and the dry climate. Fire caused extensive damage to the forest specially the regeneration, forest growth, ground flora, soil organisms and the soil productivity. Prevention of fires and effective control of fires as prescribed in the plan is essential for sustainable forest management. The fall of leaf litter on the ground combined with highly combustible under growth consisting of dense grasses, can trigger a fire in a short time. In summer high speed hot winds aid the fire to spread easily to the rest of area before it can be brought under control. Analysis of fire data for the past 10 years reveals that in the certain beats there is repeated occurrence of forest fires. These beats require specific fire management interventions. The details of the beats are given below.

TABLE NO. 9.4: FOREST FIRE SENSITIVE BEATS

Sr. No.	Range	Beats
(1)	(2)	(3)
1	Jodmoha	Sonkhas, Jodmoha, Nanza, Watbori, Rajur, Markanda, Dattapur
2	Hiwari	Kinhi, Zola, Warud E., Manpur, Bechkheda, Ghatana, Kharad, Loni, Hiwari, Bhamb, Mandeo, Arjuna, Kharola
3	Darwaha	Ladkhed, S Darwaha, Tarnoli, Ghatkinhi, Palsi, Chani
4	Yavatmal	Waraj, Pimpri, Waghapur, Kita, Lakhmapur
5	North Arni	Lonbehal, Shiwar, Chadani
6	South Arni	Chatari, Anjankhed, Ranidhanora, Bhansara, Shari, Daheli
7	Ner	Sonkhas, Lonadi, Sirasgaon, Uttarwadhona
8	Wadgaon	Sukali, Balaji Nagar, Ramgaon, Ghodkhindi, Saikheda, Pandhari, Yelabara, Chichghat, kolambi, Ramwakdi

The areas needed to be protected from fire are classified into the following categories based on purpose of fire protection.

1. Class I (Completely Protected)

- All main felling coupes and thinning coupes.
- All regenerated coupes of all working circles till the young crop has attained the age of 10 years.
- All plantations.
- All forest nurseries.
- All Government timber depots.

- Special habitat areas or any other special important areas as specified by the concerned CF/CCF.

These areas are cleared with appropriate width of fire line as per the guidelines and patrolled by fire watchers. If any fire incident takes place in this area it should be reported to the concerned DCF in detail.

2. Class II(General Fire Protection)

- The remaining areas of Selection-cum-Improvement working circle.
- All other areas as specially directed by the CF(T) of Yavatmal Circle on special grounds.
- These areas are separated from surrounding areas by means of external fire lines and will be divided into suitable blocks of interior fire lines and no trees will be cut. Fire watchers may be engaged as sanctioned by the CF(T).

3. Class III (Forests Protected by Law Only)

Those categories which are not included in class I and II are included in this class. Deliberate burning is prohibited and no special measures of fire protection will be undertaken.

The following categories of fire lines will be maintained kept clean of all the growth and combustible material.

- All external boundaries of reserve forest to the extent of width of 12m.
- 6 m wide around all the plantations upto 10th year from planting.
- 3 m wide coupe lines upto 10 years of main felling.
- 6 m wide line on both sides all along the roads and cart tracks that are passing through forests.

- 40 m wide fire lines around timber and fuel wood depots.

Fire Control Measures:

To control and reduce fire the following operations shall be undertaken.

- The cutting and cleaning of fire lines shall be completed by end of December and controlled burning shall be completed by end of February. Leaf litter on the fire lines shall be collected from time to time and burnt before the fire season begins. No fire line shall be burnt after February unless there is a special order from the concerned DCF.
- A consolidated fire protection scheme shall be prepared in consistent with the prescription given in the working plan with the provisions of watch point, strategic location, fire watcher at each location, deployment of vehicles and the supervisory forest staff.
- The fire watchers and the forest staff are required to be given training in fire protection and handling of fire fighting tools.
- Fire watcher shall constantly patrol the areas of class I and class II.
- Fire watch towers shall be erected at strategic points.
- After receiving information the fire watchers move in group to particular location and extinguish fire with the help of fire fighting tools.
- The division office will maintain a register of fire lines showing the length and width of fire line and the period of cutting and burning and a consolidated map will be prepared based on the actual position of the fire lines. Any negligence in fire protection duty shall be viewed as dereliction of duty and the supervisory officer must extensively tour in the area and verify the fire control measures.

- The members of Joint Forest Management Committee shall be involved in the fire protection and their participation and cooperation shall be obtained to have effective fire protection.
- The vehicles that are available will be deployed at strategic location where the fire protection teams can reach easily whenever they require a vehicle. These vehicles are means for transporting fire protection labourers and fire protection equipments.
- **Fire Alerts:** Forest survey of India, Dehradun provides alerts on forest fires on real time basis. These alerts are being sent to the concerned beat guards directly along with information on Latitude and longitude of the fire spot detected. These alerts should be utilized to the maximum and fires can be brought under control in a quick time. These fires spots should be collected and made available in a GIS platform for better fire management and utilization of available resources. It serves as an important tool for the field officers.

Responsibility:

The RFO is personally responsible for efficient fire protection in his range. If there is a common boundary between two ranges the responsibility of clearing fire line will be decided by the DCF. In case of common boundary between two divisions the fire line preparation and maintenance will be decided by the CCF (T).

The DCF is responsible for carrying out efficiently all protective measures for fire protection. The DCF must satisfy himself that external fire lines and other fire lines are prepared before February by carrying out extensive tours in the area. He/She is required to move in the jurisdiction extensively during fire season and during his tour must keep a strict watch on fire protection by means of local enquires and inspections. A constant watch should be kept on Tendu contractors and their agents who engage local labourers to ignite fire to the forest to get good flush of Tendu leaves.

Fire Reports:

If any fire incidence takes place the concerned Range Forest Officer must inform the DCF at once. The Range Forest Officer must keep a proper communication and co-ordination with the DCF. After the fire is extinguished, a detail report shall be submitted to the division office regarding extent of area, damage, value of damage with the detail map within 15 days. Forest Survey of India provides geo coordinates of fire daily. While preparing fire reports all these points within the division must be verified on the ground.

The division shall submit monthly report in prescribed proforma to the CF showing serial number of fires, date of occurrence, cause, area burnt, extent of damage and the steps taken to extinguish fire. A register of fire record shall be maintained at division office giving details of length fire line Class I, II and III. The fire incidence that takes place in Class I, II&, III areas shall be indicated with different marks on the map. Deliberate burning of debris on silvicultural principles to encourage regeneration need not be included in fire protection scheme and fire should not spread outside the targeted area.

9.6 GRAZING CONTROL

Fire and grazing hamper the success of regeneration of forest to a great extent. To control grazing, grazing units are formed in the division. The number of cattle heads is fixed as per the carrying capacity of the area. In Yavatmal forest division heavy cattle population pressure has degraded the forests. The Government of Maharashtra formulated the grazing policy vide its resolution no. MFP-1365/1322-Y, Dt. 6/12/1968 and the grazing rules were framed vide its G.R. no. MFP/137/237035-Z, Dt. 3/11/1973.

The main felling coupes of all working circles shall remain closed for a period of 10 years from the main felling as felling cycle is fixed at 20 years i.e. 1/4th area of the felling series will remain closed for grazing at any time. All the forests are not possible to open for grazing at a time and as the cattle population is not uniformly distributed therefore, it is prescribed the cattle exceeding carrying capacity of an

area open for grazing should not be allowed to enter into the forest. The excess cattle units can be managed through fodder development activity on common community lands and waste lands. The villagers shall be persuaded to go for stall feeding of some of their cattle which are more than carrying capacity of the forest adjoining to them and local people shall be educated and made aware of ill-effects of excessive grazing on forests growth. Apart from this the forest staff should open a dialogue with the local villagers to discuss regarding grazing policy, carrying capacity of forests and the area available to graze their cattle in the adjoining forests. The DCF should consider all the factors and prepare a consolidated plan based on area, cattle units, carrying capacity, rotational grazing and avenue for excess cattle units.

9.7 ENCROACHMENT

The problem of encroachment is common in almost all the areas specially the forest areas located adjoining to habitations. The problem of encroachment is because of lack of appropriate survey and demarcation on the ground, the greed of the people and the apathy of local people towards Government lands. In order to mitigate the problem, it is essential to take up survey and demarcation works on top priority. Precast pillars of 1st and 2nd class type shall be erected after the survey is over which can be completed in a phase manner. The existing cairns shall be repaired and maintained under 1/5th boundary demarcation scheme. The powers that were entrusted to the officers of Assistant Conservator of Forests and above rank under Sec. 53 and 54 of Land Revenue Code shall effectively be utilized. The encroachment, if any, can be tried summarily and evicted as early as possible. The following instructions shall be followed regarding encroachments.

1. Special care shall be taken to ensure protection of vulnerable patches of forests from encroachment. The civil powers of eviction are entrusted to ACF and DCF. The procedure laid out in the Land Revenue Code shall be followed before the execution of eviction. Habitual encroachers shall be prosecuted as per Indian Forest Act, 1927.

2. All external boundaries shall be demarcated with concrete pillars. All sensitive and important boundaries and wherever disputes exist, be surveyed and concrete pillars be laid immediately.
3. All encroachments shall be listed with their names, age, residence, profession whether belongs to SC, ST, OBC/NT, extent of encroachment, and location of encroachment, by the RFO.
4. A detailed report of the case be prepared for each encroacher and submitted to ACF to obtain summary eviction orders in a time bound programme.
5. After the completion of due procedure of Land Revenue Code and after giving a reasonable opportunity of being heard to the encroacher, ACF shall pass a summary eviction order if he/she satisfies so quoting the findings.
6. The concerned RFO shall execute the eviction order.
7. If the encroachments in a village are more in number, police protection be obtained for the operation. Cr. P.C. provisions such as Sections 106 and 110 be used to smoothen the eviction operations as well as to prevent the tendency of future encroachments.
8. For the encroachments on the un-classed forests (though 7/12 shows clear possession of the department) FIR shall be lodged in the concerned police station for the prosecution.
9. Regularisation of the encroachments made earlier to 1980 be settled as early as possible and necessary proposals be submitted to the Government.
10. After the listing of all encroachments, sample verification shall be carried out by all supervisory officers to detect unregistered encroachments.
11. In the month of May, a drive for encroachment prevention be taken up in all the sensitive areas by taking meetings in the villages, distribution of leaflets and posters.

12. Keep a watch on all the sites meant for debris cleaning, ploughing etc., in the month of May, so that encroachments are removed even before the sowings.

In the recent past the tendency for encroaching forest land for cultivation has increased. The causes of forest encroachments shall be examined thoroughly and corrective measures be taken. All necessary support should be extended to evict the encroachments as early as possible. The boundary management and standard administrative guidelines will help to control the encroachment. RFO must inspect at least 50% of the boundary demarcation, ACF at least 10% of the boundary demarcation, DCF at least 2% of the boundary demarcation. RFO Mobile Squad shall check 10 % of the boundary demarcation.

9.8 ROLE OF JOINT FOREST MANAGEMENT

JFM Committees will contribute to a large extent in protection of the forest from illicit felling, encroachment fire, grazing, etc. provided if the forest staff have a constant dialogue with the members of the committees and involve them for joint patrolling, management and development of the forest.

The JFM committees shall be entrusted with a specific area ear marked for them for the protection, management and development of the area. The committee members should to be given training in technical matters of protection and at the same time they should be provided with gainful employment by taking up management and developmental activities in the areas entrusted to them.

CHAPTER-10

MANAGEMENT OF SPIRITUAL AND CULTURAL ASPECTS OF FORESTS AND ECOTOURISM

Forests have long been revered as sacred spaces, places of worship, and sources of inspiration. They are believed to be inhabited by spirits, deities, and ancestral beings, and are often associated with rituals, ceremonies, and traditional practices. Indigenous communities, in particular, have deep spiritual connections with forests, viewing them as integral parts of their identity, heritage, and worldview. Forests serve as providers of resources, healers of ailments, and symbols of wisdom, strength, and resilience.

The cultural aspects of forests encompass a rich tapestry of stories, folklore, and oral traditions that have been passed down through generations. These narratives often convey the ecological knowledge, ethical values, and social norms that govern human interactions with nature. Forests are repositories of traditional knowledge, offering insights into medicinal plants, sustainable harvesting practices, and ecological stewardship. They serve as outdoor classrooms, where elders and knowledge holders pass on wisdom and skills to younger generations, ensuring the continuity of cultural traditions.

The spiritual and cultural significance of forests extends beyond indigenous communities, as many cultures have developed their own unique connections with these natural spaces. Forests are often depicted in art, literature, and music, evoking a sense of awe, mystery, and tranquility. They serve as settings for pilgrimages, meditation retreats, and spiritual quests for individuals seeking solace, enlightenment, and a deeper connection with the natural world.

Recognizing and respecting the spiritual and cultural aspects of forests is essential for their sustainable management and conservation. It involves engaging and consulting with local communities, indigenous peoples, and cultural experts to

understand their beliefs, practices, and traditional ecological knowledge. Management strategies should incorporate cultural considerations, such as designating sacred sites, protecting cultural heritage, and integrating traditional practices into forest management plans. Collaborative approaches that foster dialogue, mutual respect, and co-learning between different stakeholders are key to ensuring that cultural perspectives are valued and incorporated into decision-making processes.

Embracing the spiritual and cultural aspects of forests in their management not only honors the diverse cultural heritage but also contributes to the overall well-being of communities and the resilience of ecosystems. It fosters a sense of belonging, cultural pride, and intergenerational knowledge transmission. Moreover, recognizing the intrinsic value of forests as more than just ecological resources strengthens the connection between people and nature, fostering a holistic approach to conservation and sustainable development.

Recognizing and respecting these values is essential to ensure that ecotourism activities do not undermine or erode the cultural heritage and spiritual connection people have with forests. It involves engaging and consulting with local communities, indigenous peoples, and cultural experts to understand and incorporate their perspectives and knowledge. This includes integrating cultural practices and rituals into ecotourism experiences, promoting cultural exchange between visitors and local communities, and fostering a sense of respect and appreciation for the spiritual significance of forests. By managing the spiritual and cultural aspects of forests within the realm of ecotourism, we can create meaningful and respectful experiences for visitors while safeguarding the cultural heritage and spiritual values that are intertwined with these natural environments.

10.1 PRINCIPLES OF ECOTOURISM

Eco-tourism is about uniting conservation, communities and sustainable travel. This means that those who implement, participate in and market eco-tourism activities should adopt the following eco-tourism principles:

- Minimize physical, social, behavioural and psychological impacts.
- Build environmental and cultural awareness and respect.
- Provide positive experiences for both visitors and hosts.
- Provide direct financial benefits for conservation.
- Generate financial benefits for both local people and private industry.
- Deliver memorable interpretative experiences to visitors that help raise sensitivity to the sites' environmental and social importance.
- Design, construct and operate low-impact facilities.
- Recognize the rights and spiritual beliefs of the local/indigenous people in the community and work in partnership with them to create empowerment.

10.2 ECOTOURISM POLICY

- Ministry of Tourism, in Government of India has declared "Eco-tourism in India Policy and guidelines, 1998". This policy has underlined the activities of tourism ought to be environment-friendly having no adverse impact on ecosystem.
- The UNWTO came into force on September 27, 1970. To make people aware on the role and impact of tourism on society, the UNWTO started celebrating World Tourism Day on September 27 every year since 1980. Every year a theme is launched on the eve of World Tourism Day by UNWTO. Eco-tourism, environment protection, climate change, biodiversity, community development, etc. became themes of World Tourism Day.
- Government of Maharashtra, in Tourism and Cultural Affairs vide Resolution No. MTC-2005/2/CR-172/Tourism, Mumbai dated -2006, declared Tourism Policy-2006 having tourism vision 2025. This policy has identified "Eco-

tourism” sector. Infrastructure development, public-private partnership, capacity building, creating awareness etc. are highlights of this policy.

- The Eco-tourism activity should be concise and small for operationalization.
- It should be proper in view of environmental, social and cultural aspects.
- It should be proven and worthy of adoption.
- Participation of local community.
- It should neither be degrading nor destructive.
- As per tourist demand but definitely with some restrictions.

This policy entrusts Forest Department to prepare management plan of eco-tourism centers’ in pursuance of Forest Conservation Act,1980, Wildlife Protection Act ,1972 and guidelines by National Tiger Conservation Authority. The Maharashtra Eco-tourism Board has key role in co-ordination of line departments, granting of permission for infrastructure development, signing of MoU with Forest Department for development of infrastructure and revenue sharing.

The Government of Maharashtra, in Revenue and Forest Department vide Resolution No.M-2011/C.R. 174/F-5, Mumbai, dated 24.11.2011 has issued guidelines for implementing eco-tourism activities in forest areas. Identification of eco-tourism places, preparation of management plan, involvement of stake holders, stay and food facilities, home-stay facilities, capacity building of local people and staff, identification of various types of tourism etc. are important provisions to be considered.

10.3 ECO-TOURISMS SITES

Following Sites are Eco-tourism spots in Yavatmal Forest Division:

TABLE NO. 10.1: ECO-TOURISMS SITES IN YAVATMAL FOREST DIVISION

Sr.No.	Range	Name and location	Comp.No.
(1)	(2)	(3)	(4)
1	Yavatmal	Oxygen Park, Godhni Road	513
2		Vasant Smruti Forest Park, Yavatmal	513
3		Bamboo & Chandan Park, Dhumnapur	465
4		Biodiversity Forest Park, Jamb	512
5		Chandan Park, Waraj	410
6		Eco-Park, Pimpalgaon	488
7		Nagar van, Moha	464
8	Hiwari	Hiwari Mandev Mandir, Manpur	496
9	Darwha	Darwha Forest Park, Darwha	117
10		DeulgaonWalsa Sri MahalakshmiDevasthan, Deulgaon	114
11		Dhamangaon Dev Sant Mungasaji Maharaj Samadi Sthal,Dhamangaon	159
12	Ner	Aroma Park, Ner	425
13	South Arni	Mangul Eco Tourism Park, Mangul	41

TABLE NO. 10.2: POTENTIAL ECOTOURISM SITES

Sr.No.	Range	Name and location	Comp.No.
(1)	(2)	(3)	(4)
1	Ner	Nagar Van, Ner	425
2	Darwha	Mungsaji Maharaj Mandir Forest Park, Lohi	451
3		Pathrad Devi Forest Park, Pathrad	73
4	North Arni	Mahadev Mandir Forest Park, Deurwadi	58

Sr.No.	Range	Name and location	Comp.No.
(1)	(2)	(3)	(4)
5	Jodmoha	Hanuman Mandir, Sonkhas	325
6	Wadgaon	Yelabara Waterfalls, Yelabara	214
7	Hiwari	Baralingeswar mandir, Bambh	--

10.4 ROLE OF FOREST DEPARTMENT

The Department shall develop the centers of eco-tourism with controlled accessible points at strategic places. Eco-tourism centres include roads, self-guided nature drive, transport options, interpretation centers, signages, observation towers, butterfly garden, souvenir shop, recreation zone, adequate lodging and dining facilities, nature friendly garbage disposal facility and other amenities as per the requirement. Any development of buildings and other infrastructural facilities or activities shall be nature-friendly and eco merging. Primarily, local people should be involved while execution and maintenance of the activities in order to fetch benefits to them and thus building rapport with them which should be aimed at eliciting their support for the conservation of forests of the Division.

Environmental, physical and social carrying capacity should be clearly specified before developing or conceiving any ecotourism activity in order to limit the developmental activities. The division will provide information regarding what to see?,how to see?,and how to behave?to the visitors by providing brochures, leaflets and specified guides and visitor information centers.

Division shall prepare and distribute code of conduct to all visitors. Training programmes should be organised for forest personnel and general public and JFM committees to enhance awareness regarding various managerial aspects about eco-tourism.

Similarly, due care should be scrupulously taken even while planning, execution and maintenance phases of site expansion and development to strictly abide by the laid down procedures, legal provisions etc.

10.4.1 CODE OF CONDUCT AND EXCEPTIONS FROM VISITORS

Proper guidelines shall be prepared and the visitors shall abide by these guidelines. Some of which could be as mentioned below:

- The habitats of flora, fauna and any sites of natural or cultural significance shall not be affected by tourism.
- Make no open fires and discourage others from doing so. If water is to be heated with firewood, use as little as possible. Wherever feasible, use fuel efficient wood stove.
- Remove litter, burn or bury paper and carry back non degradable litter.
- Keep local water clean and avoid using pollutants such as detergents in streams or springs. If no toilet facilities are available, try to relieve yourself at least 30 meters away from water sources and bury or cover the waste.
- Plants should be left to flourish in their natural environment and avoid taking away cuttings, seeds and roots.
- Leave the camp sites clean after use.
- Help guides follow conservation measures. Do not allow groups to throw garbage in the streams or rivers.
- Respect the natural and cultural heritage of the area and follow local customs.
- Respect local etiquette. Attire and public behavior should be in accordance with local customs.
- Respect privacy of individuals and ask permission before capturing photographs of local inhabitants.
- Respect holy places. Do not or remove religious objects.

- Strictly follow the guidelines for personal safety and security and always take your own precautions and safety measures.

10.4.2 ROLE OF NON GOVERNMENT ORGANIZATIONS

Established NGOs will be allowed to take lead in eco-tourism activities and harness the potential of eco-tourism for the development of local people. The role of NGO will be creation of awareness in all aspects of eco-tourism, motivation of local community in participation of sustainable eco-tourism activity. Trainings in hospitality, catering, transportation, etc. shall be conducted using NGOs.

10.4.3 ROLE OF COMMUNITY

- Participation of local people in aspects of eco-tourism development makes the tourists aware about the locality, without disturbing ecological balance.
- JFM members along with Forest Department shall act as efficient caterers and guides to eco-tourists.
- To be friendly with visitors and help them in eco-tourism practice.
- Practice conservation of nature and culture as a way of life.
- Preserve the values of respecting environment, flora and fauna, the monuments and their cultural heritage.

10.4.4 THE ENVIRONMENTAL PLEDGE

While promoting eco-tourism in the tract environment pledge shall be displayed at strategic locations. The environment pledge shall indicate about publicity on recycle paper, disposal of polythene bag, garbage disposal, alternate source of energy for fuel, water catchment and treatment, eco friendly lodging and resorts, planting of saplings, etc.

As these sites are yet to be developed, there is plenty of scope to develop in a manner that is both eco-friendly and beneficial to the communities. The principles of eco-tourism stated above should be the guide for all such developments.

- Biodiversity garden, Medicinal Plants gardens, Nakshatra van etc.
- Nature interpretation centers,
- Adventure Sports,
- Tent camping,
- Nature Trail,
- Observation towers,
- Camping,
- Home stay development,
- Boating,
- Observation tower,
- Bird watching,
- Protection hut.

Apart from keeping in mind the principles of eco-tourism, the Department should ensure that the following area adhered to:

- While developing eco-tourism sites, it should be verified that the proposed activities must not attract nor violate provisions under Forest Conservation Act, 1980.
- The Deputy Conservator of Forests shall prepare a Eco-tourism Development Plan for the Division incorporating potential sites and get it approved from the Maharashtra Eco-tourism Development Board.
- Local people especially the JFM Committees and EDCs wherever in existence should be fully involved right from the planning stage.

- Adequate training and capacity-building of the staff and locals should form part of the development plan.
- The speciality and uniqueness of each site should be properly documented and should be brought up in attractive brochures keeping in mind the information that tourists would require and the Dos and Don'ts for such tourists.
- Any local traditional product, crafts, food items/local cuisine, cultural display etc. should be encouraged as part of the eco-tourism package.
- The development of the ecotourism sites should go hand in hand with the conservation of the biodiversity, the nurture of environment and the appreciation of nature by the tourists.

While designing the plan conservation of forests and wildlife should be of prime importance. The different actors/stakeholders such as the community, visitors, businesses, NGOs should be taken into consideration. A common phenomenon is that eco-tourism can generate both symbiosis and conflict between the actors. The potential for eco-tourism to result in symbiosis between conservation and development has been widely touted, but the potential for conflict should not be ignored.

CHAPTER-11

WORKING PLAN FOR MISCELLANEOUS WORKING CIRCLE

11.1 GENERAL CONSTITUTION

This working circle consists of Reserve Forest handed over to other departments which are yet to be disforested.

TABLE NO. 11.1: AREA OF MISCELLANEOUS WORKING CIRCLE

Sr. No.	Range	Area (ha) of Range	No. of Compt.	Area allotted (ha)				% to the Area of Range	% to the Area of WC
				RF	PF	Uncl- assed	Total area		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Yavatmal	8902.41	0	0	0	0	0	0.00	0.00
2	Hiwari	11536.44	0	0	0	0	0	0.00	0.00
3	Wadgaon	7360.99	2	214.02	0	0	214.02	2.91	17.24
4	Jodmoha	13370.86	0	0	0	0	0	0.00	0.00
5	Ner	7180.06	2	10.63	0	0	10.63	0.15	0.86
6	Darwha	15233.9	29	952.38	0	0	952.38	6.25	76.71
7	North Arni	10777.78	2	64.46	0	0	64.46	0.60	5.19
8	South Arni	9172.17	0	0	0	0	0	0.00	0.00
Total		83534.61	35	1241.49	0	0	1241.49		100.00

11.2 GENERAL CHARACTERISTICS OF VEGETATION:The nature of vegetation is of scrub or open type with poor quality of teak in few pockets. Majority of the area has already been handed over to other departments.

11.3 METHOD OF TREATMENT:The areas which were handed over to other departments will have the same legal status until they are denotified. Therefore, it is prescribed that a proposal shall be mooted to denotify these areas and necessary entries should be made in Form No. 1 after denotification.

CHAPTER-12

MISCELLANEOUS REGULATIONS

12.1 BOUNDARY DEMARCATION

A well-defined forest boundary is a prerequisite for effective forest protection and its sustainable management. Forest areas vulnerable to boundary obliteration need to be identified for survey and demarcation so that forest encroachment on the forest fringes could be detected, promptly. Presence of boundary marks also serves as a psychological barrier against forest encroachment. Areas which are un-demarcated and forest boundaries adjoining private land shall receive the highest priority to ensure protection of these areas. In order to keep the integrity of forest areas intact, strict vigilance over the forest boundary and periodic verification of the demarcation on the ground for the entire forest area has been prescribed.

12.1.11/5th BOUNDARY DEMARCATION

It is prescribed to work the entire boundary of Reserve Forest and Protected Forest in a 5 years period. Details of the compartment boundary for this purpose are provided in **Appendix No. XXXI** of Volume-II.



12.1.2 ROUTINE BOUNDARY MAINTENANCE

1. The Beat Guard is primarily responsible for protecting and maintaining the boundary pillars every year. All boundary marks shall be inspected by the Beat Guard every month in his/her beat. The boundary marks inspection will be mentioned in their diary and shall be sent to RFO.
2. The Round Officer is equally responsible for protection and maintenance of all boundary marks in the forest in his/her round. He/she is required to ensure proper maintenance and colour wash by the beat guard as directed.

The Round Officer is responsible to inspect all boundary marks in a year which are due for maintenance and repairs as per 1/5th boundary demarcation scheme. This shall be mentioned in the monthly diary. Half of his/her inspection should involve checking of the work done during the previous month by the Beat Guard in his jurisdictions and the other half should involve checking of the compartments not reported by the Beat Guards during the months.

12.1.3 SPECIFICATION OF BOUNDARY PILLARS

The forest boundary marks will be as per the specification prescribed the Principal Chief Conservator Of Forests M.S. Nagpur vide his letter no.CF/LR/68/2000-2001 Nagpur Dated May 29,2001. Accordingly, 1.40m long cement concrete pillars at roughly 50 m intervals on the external forest boundaries will be erected. Wherever the external boundary is shared with other government land, the interval should be increased to 100-150m and intermediate pillars may be 0.90m long. Both types of pillars should be embedded to 0.40m depth in the cement-concrete base. The prescribed tapering cross-section of the 1.40m pillar is 0.10 x 0.15m at the top and 0.15 x 0.23m at the base. The 0.90m pillars are parallel pipe with 0.15m width and thickness.

12.1.4 SPECIFICATION OF A BOUNDARY CAIRN

Artificial boundaries should be marked with a series of boundary cairns. A cairn should be made of loose stones upon excavated foundation to a depth of 30cm and shaped like a truncated cone. Interspaces between the large stones should be filled in with small stones, and the outer stones will be wedged with stone chips. A cairn will be 1.20m high and have 1.20m top diameter and 1.80m base diameter, as described in the Central Province and Berar Forest Manual. A slab stone (0.20 x 0.20 x 0.90m) or a timber stake projecting ½ m (half) in the centre will be fixed firmly on the top of the cairn, and marked with cairn serial number. Each boundary mark (cairns) must be visible from its neighbouring ones on both sides. Distance between two consecutive boundary marks should not exceed 250m. The cairn stone or post

should be colour washed white for the open forests and red for the closed forests. The cairn tops should have direction of boundary lines shown by the same colour lines radiating from the centre. Such cairns can be made of earthen mass, where stone boulders are not available.

12.1.5 RECORDING LOCATIONS OF THE BOUNDARY PILLARS OR CAIRNS

The location of the boundary pillars and cairns along with their numbers should be shown on the maps. The numbering will follow the convention communicated by the Chief Conservator of Forests in charge of the land matters. The numbers shown on the topo-sheets will be maintained unless warranted by compelling reasons. Such reasons must be reduced in writing and entered as a note on the master set of the maps. This master set shall be made available to the Office of DCF Working Plan, Yavatmal for updating the working maps and the digital database with GPS reading. Also, the register for maintenance of boundary pillars shall be updated at range and division level.

12.1.6 CLEARANCE FOR THE BOUNDARY LINE

Boundary line clearance on the artificial boundaries will follow the standard width as described in the directives on the subject. Trees should not be felled for the boundary line, but shrubby undergrowth should be cleared. Norm for the external boundary line is 12m. The internal compartment boundary lines should be 3m wide.

12.1.7 COMPARTMENT PLATES

Metal plates on the boundary trees at a height of 2.5 to 3.0 m will be fixed on the corners and roughly at half-kilometre intervals on the side away from the compartment. The colour of the plate and lettering should agree with the state-level general guidelines. Till such guidelines are available, red letters on white plates will be used. Size of the plate and letters should not be less than 15 cm and 10 cm, respectively. Strokes should be at least 2 cm wide.

12.1.8 COLOUR WASH ON THE BOUNDARY MARKS

The Beat Guard shall be responsible for annual freshening of the pillar numbers, the compartment plates and the colour-wash of the boundary pillars carried out in September-October. He/she must submit details for work done in each compartment in his/her Annual Colour-Wash Report. The RFO shall carry out sample checking of the report in the manner decided by the RFO. Only material cost should be admissible for the purpose.

12.1.9 REVIEW AND MONITORING OF BOUNDARY DEMARCATION WORKS

Continuous review and monitoring of boundary demarcation works is absolutely necessary to ensure time bound implementation.

12.2 DEMARCATION, PREPARATION OF TREATMENT MAP AND MARKING OF COUPE

12.2.1 DEMARCATION OF COUPE

1. The annual coupes for harvesting will be demarcated one year in advance, and each coupe, if so required, may be subdivided into four sections for effective management and control. The Range Forest Officer will thoroughly inspect the coupe after demarcation and issue 'Coupe Demarcation Certificate' in the prescribed format, given in the following paragraph, which is to be verified by the concerned ACF.
2. Format for the coupe demarcation certificate is prescribed, as follows,

"I _____ R.F.O.
_____ certify that I have personally
inspected the demarcation of the coupe No. _____ in Compartment
No. _____ of F.S. _____ of W.C. _____ on
dated _____ and found that the coupe has been demarcated as
prescribed in the working plan. The area of the coupe is _____ hectares.

Date:

Signature of the RFO

3. **Demarcation of Coupes:** Annual coupes have been prescribed to be demarcated by cutting and clearing bushy undergrowth on 3 m wide line and by erecting pillars or posts up to 2 m height in middle of the cut line at suitable intervals, so as one pillar shall be visible from the other one, except where the coupe boundary runs along streams, fire line or road. The pillars shall bear the coupe number, name of the felling series and the working circle on the side away from the coupe.
4. Selected trees, above 45 cm GBH, at suitable intervals standing on the periphery of the coupe will be given two coal tar bands and a geru band in between after scraping the loose dead bark. The lower coal tar band will be at breast height and the other coal tar band will be 15 cm above it. Just below the lower coal tar band, tree serial number in Arabic will be given on the side away from the area of the coupe. The bands and serial numbers of such trees will be maintained in the marking register as follows.

Sr.No.	Name of species	GBH (OB)	Remarks
1			
2			
3			

5. No tree, bearing the coupe demarcation bands, is proposed to be marked for felling.
6. **Demarcation of Sections:** For effective monitoring and control of the harvesting operations, each coupe marked for felling in will be divided into approximately equal sections (Each section not more than 20 ha). Sections

will be demarcated by 1.5 m wide cut lines by clearing brushwood, unless the section line runs along a permanent feature.

7. Trees above 45 cm girth, selected at suitable intervals on the inner edge of the 1.5 m wide cleared section line will be given two coal tar bands 15 cm apart, the lower coal tar band being at breast height. Just below the lower coal tar band section number will be given on the side away from the area they would denote.
8. Demarcation of other areas given in the treatment map: The other categories of areas shown in the treatment map will be marked by giving one geru band at breast height and one coal tar band 5 cm above it.

12.2.2 TREATMENT MAP

1. Immediately, after completion of demarcation of the coupe, Round officer shall prepare the treatment map of the coupe under the close supervision of RFO by clearly showing the various treatment-type areas as prescribed in each working circle. The concerned ACF shall verify the treatment map and make corrections, if necessary, before submitting them to the DCF for approval.
2. Preparation of treatment map shall be done one year in advance of the coupe working. Timely preparation would facilitate necessary checking and corrections, if any, in time.
3. Immediately after seeking approval of the treatment map, site-specific work plan for the entire coupe shall be prepared by RFO, incorporating all the prescribed activities under various treatment-type areas marked on the map, entailing quantum of work involved, estimated amount required and period of operation for each activity. The work plan is proposed to be verified by the ACF concerned and submitted for approval to the competent authority.

12.2.3 MARKING OF TREES FOR HARVESTING

1. After approval of the treatment map, marking of trees for harvesting shall be carried out as per prescriptions given in respective working circles. Marking of trees for harvesting shall be done one year in advance of the coupe working and it shall be done departmentally. Timely marking would facilitate necessary checking and corrections, if any, in time.
2. Marking is prescribed to be done by the Round officer concerned under the close supervision of RFO and constant guidance of ACF concerned. The DCF shall himself inspect majority of coupes to ascertain proper marking as per prescriptions of the working plan as well as to guard against the excessive marking. To ensure this close supervision, a marking certificate in the following format is prescribed.

I _____ RFO, _____ personally inspected the marking of the coupe No _____ in compartment No _____ of felling series _____ in _____ Working circle _____ on dt _____ and found that marking of trees for felling has been done as prescribed in the working plan.

Date :

Signature of the RFO

3. Trees marked for felling will be given geru bands at breast height and will bear marking hammer impression at breast height as well as at the base on the blazes of sizes 10 cm x 10 cm. The blaze size should be strictly adhered to so as to aid in identification of marked trees at the time of felling. Trees marked for felling will be serially numbered with coal tar.

4. All trees bearing serial numbers will be individually recorded in marking register. Remarks column shall invariably mention about the deformities if any, such as dead, top broken, hollow, severe insect damage etc.
5. Abstract of trees marked for felling shall be made in 15 cm girth classes. Timber, poles and firewood trees shall be shown, separately.
6. Malformed trees alone shall be recorded as fuel trees, except that of teak. A tree will be classified as fuel tree only when it is incapable of yielding any useful sawn timber or pole.

12.3 SUBSIDIARY SILVICULTURAL OPERATIONS

All these operations shall be carried out departmentally. These operations shall include –

1. Cut Back Operations: CBO shall be carried out in the following year of the main felling.

- Climber cutting of the entire area.
- Removal of badly damaged or broken trees desiring main felling.
- Cutting back of malformed advance growth.
- The unwanted undergrowth interfering with the Teak and other valuable miscellaneous species shall be removed.
- The multiple coppice shoots or poles shall be reduced to one per stool.
- In eroded areas or areas liable for erosion soil conservation measures shall be taken up by way of gully plugging, nala bunding, check dams, etc.

2. Cleaning: This operation will be carried out departmentally in the 6th year after main felling.

- Climber cutting of the entire area of the coupe.
- Removal of damaged and malformed saplings in teak plantation area.
- All coppice shoots shall be completely cut except in areas where planted stock has not come up successfully and in such areas multiple coppice shoots shall be reduced to 1 per stool which is most promising and vigorous one.
- The undesirable growth interfering with teak and other valuable miscellaneous species shall be cut.
- In the patches of advance growth of teak and other valuable species proper spacing shall be created by removing inferiors in tree growth.
- Cleaning of weeds at the base of teak plants and intensive soil mulching shall be carried out immediately after the rainy season is over.
- Cleaning shall be carried out before 1st thinning.

3. Thinning:

Thinning in plantations is very essential and one of the silviculture requirements to provide appropriate spacing based on the number of plants required in a site in relation to age of crop. For appropriate utilization of soil many plants have to be removed. In the plantations thinning operation shall be carried out as per standard technique for thinning in teak plantation.

For teak, the 1st thinning will be carried out at the age of 10th year of plantation and subsequent thinnings shall be carried out at the interval of 10 years.

12.4 IRREGULAR HARVESTING

12.4.1 RESTRICTION ON IRREGULAR HARVESTING: Irregular harvesting of timber, firewood and other NTFPs is prohibited, except in the following cases:

1. **Harvesting for the Fire Lines and the Transmission Line:** The DCF may permit felling of trees within the prescribed width of the established fire lines and the approved power transmission line. The prescribed width in the guidelines for the Forest (Conservation) Act, 1980 and rules, there under, will be applicable to the transmission lines. Creation of new fire lines shall require prior permission of the CF(T).
2. **Felling for the Haulage Roads:** The DCF may permit felling of trees for the purpose of haulage roads that are temporary in nature, and should be aligned properly to ensure minimum possible felling of trees.
3. **Harvesting in Forest Areas Diverted for Non-forestry Purposes:** Felling of trees on forest land required by the other departments such as Irrigation, PWD, etc., will only be undertaken after the proposals for the use of forest land for non-forest purposes are approved by the Government of India under the provisions of the Forest Conservation Act, 1980 and as per latest guidelines issued by GOI from time to time for specific projects. The DCF may permit felling of trees on forest land diverted for the non-forestry purposes as approved under the provisions of the Forest (Conservation) Act, 1980. The material obtained from such harvesting will be brought to the depots and will be disposed off as per departmental procedures.
4. **Harvesting of Dead, Fallen and Uprooted Trees in the Storm:** Removal of dead, fallen firewood and trees uprooted by wind or storm from all parts of the forests, except the coupes due for working, will be done in the following manner:
 - a. Every year in the month of October each Beat Guard shall report the availability of dead fallen firewood and trees uprooted by wind or storm to the concerned RFO.
 - b. The RFO shall estimate availability for such material in each compartment and the ACF concerned will verify the same.

- c. If more than 2 such trees per hectare is estimated, proper marking will be carried out. Two dead and fallen trees are required for retention from wildlife conservation.
- d. Wood removal will be carried out from the compartment after approval of the DCF. The details of material obtained from each compartment and revenue realised from it will be entered in the respective Compartment History Form.
- e. Harvesting of dead and fallen firewood is governed by the nistar rights and privileges as admitted in the nistar patrak or directed by the government from time to time.

No irregular harvesting for the purpose of undertaking plantations/afforestation works under schemes outside the scope of this Working Plan will be taken up in any of the areas under the working plan.

12.5 ARTIFICIAL REGENERATION

12.5.1 PLANTING OF TEAK AND MISCELLANEOUS SPECIES

Plantation of suitable teak and miscellaneous species shall be taken up in the following year of main felling as per the suitability of site. Stump planting shall be carried out in case of stump planting or root trainer planting whereas in case of misc. species root trainer or poly pot planting shall be prescribed. The planting works will be carried out as given below.

Pre-Monsoon Works: These operations will be done in the year of main felling. Fencing or TCM will be prepared for the protection of the plantation. The TCM will be having standard cross section 1.90 X 0.60 X 1.0 m will be dug where the boundary runs along the contour. No TCM will be aligned which runs across the contour and in that case live fencing shall be undertaken. Wherever possible, fencing shall be preferred over TCM.

Pit Digging:The size of pit may be 45 X 45 cm. for miscellaneous plantation and the pit digging shall be completed before March and it should be allowed to weather during summer. The pit refilling shall be completed before the end of May.

12.5.2 NURSERY OPERATIONS

Teak Stumps:These shall be prepared from one year old seedlings raised on the beds as per standard nursery techniques. The seed sources must be from a known place and duly certified by the competent authority. The stumps shall be prepared by following standard techniques.

Miscellaneous Species:These plants shall be raised in polythene bags following standard miscellaneous nursery techniques. Standard size of poly bags for raising miscellaneous species plants should be in accordance with the objective of obtaining optimum size of plants. The nursery operations shall commence by October of the previous year of the planting. The height of plants will vary from species to species. Shifting of poly bags will be taken up within the nursery, every 15 days once the plant attains 10 cm. height. However, care should be taken while shifting that the plants shall not be damaged. The potting mixture shall be managed properly and application of suitable mixture and fertilizer will be carried out at appropriate intervals. Before plantation good quality, healthy and appropriate size plants will be selected and these will be inspected by the officer not below the rank of ACF.

1st Year Operations:

Species of live hedge species shall be taken up in three rows. Planting of Agave on the outer rows of fencing at a spacing of 15cm and planting of shrub cuttings in inner rows will be done. Teak stump plantation will be done in crowbar holes whereas the polythene bag planting will be done in pits after the onset of monsoon.

12.5.3 SUBSEQUENT OPERATIONS

1st weeding along with causality replacement shall be completed within 20 to 25 days after the plantation is over. The 2nd and 3rd weeding will be carried out in the

month of September and October respectively. The 3rd weeding shall be coupled with soil working and mulching to reduce vaporization losses. One more soil working will be done in the month of January if there are winter rains, based on the availability of funds. Weeding and soil working to the seedlings and live hedge will also improve the growth and survival of plants on live hedge. In the second year plantation the causality replacement will be carried out after onset of monsoon and weeding shall be done in the month of August and October respectively. Soil mulching shall be carried out along with 2nd weeding. In case of teak, debudding will be done in the month of May. In 3rd year plantation only one weeding along with soil mulching shall be done in the month of September. Debudding in teak plantation shall be taken up in the 2nd year.

12.6 SOIL AND MOISTURE CONSERVATION WORKS

All soil and moisture conservation works shall be carried out on watershed basis.

12.6.1 WATERSHED TREATMENT METHODOLOGY

Watershed development in forest areas tries to reduce the volume and the velocity of runoff through a series of interventions. The aim is to lower the water velocity, to make the water flow vertically downwards rather than horizontally across the area. Interventions are considered at diverse points in a location-specific manner utilizing locally available materials and the vast knowledge of the local people regarding water flows and resource availability. Interventions are generally planned according to the “ridge-to-valley principle.”

A usual mistake is to begin by constructing a water harvesting structure in the lowest part of the watershed without treating the upper part of the catchment. These results in rapid silting up of the storage capacity created because of the soil erosion taking place in the upper part of the catchment. Therefore, ideally it must begin with the treatment of the ridge area followed by the smallest drain, moving on to larger and larger drains in the watershed, arresting the runoff at each point. As a whole, soil moisture conservation works to be undertaken under various schemes

including Jalayukt Shivar programmes should be implemented keeping in clear view the technical and scientific specifications and requirements.

Broadly the interventions are categorized into two groups: (1) Ridge area interventions and (2) Drainage line interventions.

12.6.2 Ridge Area Interventions

Ridge area interventions include forest area and lands of marginal farmers located usually on the ridges and upper reaches. These areas are managed initially. This results in reduction in velocity of water, soil conservation and prevention of silt deposition in water harvesting structures on the downstream site. Soil and water conservation measures undertaken in the ridge area will help recharge deeper aquifers in the discharge zone as well as regenerate the degraded forest cover.

While undertaking ridge area treatment, one must remember we are trying to reduce soil erosion and not to increase it, or in another word the aim of watershed development is to reduce the slope of land and not to increase it. The following points need to remember while selecting the Ridge Area interventions:

- Utmost care should be exercised not to disturb the existing vegetation.
- If boulders are to be used in any structure, they should never be dug out from the soil.
- On slopes greater than 25%
 - Intensive plantation of grasses and shrubs
 - Where boulders are available, contour bunding with boulders
- On slopes greater than 10% and less than 25%, contour trenching is preferred.
- On slopes less than 10%, earthen contour bunding shall be taken up.
- Plantation of trees should be taken up on barren patches and where the crown cover is less than 40%

- Encouraging natural regeneration by grazing control, stump dressing of freely coppicing varieties, micro-water harvesting structures and weeding around saplings, treating bamboo clumps by shoring them up with mud.

12.6.2.1 RIDGE AREA TREATMENTS

Ridge Area Treatment by Forest Regeneration and Plantation:

On slopes steeper than 25% in the ridge area, it is advisable to undertake vegetative interventions only. Where the ridge maintains an existing forest with some vitality, the general thrust should be towards protection and regeneration. In other situations, the plantation may need to be undertaken.

Ridge Area Treatment Contour Trenching:

Contour trenching is a simple and a low-cost method of checking the velocity of runoff in the ridge area of any watershed. A contour trench is a trench dug along a contour line. A contour line is an imaginary line, which joins points together of the same elevation. Digging a trench along such a line increases the chances of containing runoff for a more extended period of time within the trench. It is equally accurate that if trenches were not to follow a contour, such digging could actually increase the possibility of soil erosion because there would be a rise in the velocity of runoff following an increase in the slope of the land.

Objectives:

- Slowing down the velocity of runoff
- Checking soil erosion, and
- Improving local soil moisture profile

Contour trenches are constructed in the ridge area of a watershed. Rainwater, which falls in this area, flows unchecked carrying with it eroded soil into the flatter portion of the watershed referred to as the "valley." This eroded soil gets deposited as silt in the reservoirs and ponds, thereby reducing their life. Thus, any

water harvesting work undertaken in the valley will become meaningless unless appropriate measures like the contour trenching are undertaken to control runoff and soil erosion on the ridge. Contour trenches serve to collect the rainwater that falls in the ridge area. This way the soil moisture profile in the area adjacent to the trench gets improved. Along with the water, the eroded fertile topsoil gets deposited in the trench. It is, therefore, necessary to combine trench construction with the plantation.

Location:

- If the slope of the ridge area is 25% or more, the best form of treatment is the planting of grasses, shrubs and trees. This is because for contour trenches to be effective on such high slopes, they will have to be constructed at very close intervals, which could end up causing more soil erosion due to excessive digging.
- On the other hand, if the slopes are less than 10%, even then contour trenches are not considered to be the best measure. This is because in such a situation, in comparison to contour trenches, contour bunds are a more effective means of checking runoff and soil erosion. In a contour bund, water not only stops in the excavated portion but also against the bund. Therefore, wherever possible, contour bunds must be constructed in place of contour trenches. However, on very high slopes, it is not possible to make contour bunds since there is a great danger of the bunds breaking.
- Thus, given the above considerations, contour trenches are the most appropriate where the slope of the ridge area lies between 10 to 25%.
- It is an ideal treatment for the non-agricultural land.
- CCT should be avoided in areas with black cotton soil and if the depth of soil is less than 20 cm.

Distance between Trenches:

The distance between the two successive trenches depends on the volume and the velocity of runoff they are expected to handle. This in turn depends on:

- The quantum of rainfall: The greater the rainfall, the lesser the distance
- The permeability of the soil: The more permeable the soil, the greater shall be the distance
- The slope of the land: The greater the slope, the lesser the distance

That is, as the volume and velocity of runoff increase due to any reasons given above, the trenches should become more closely spaced. In several watershed programmes, however, a specific procedure has been adopted for fixing the intervals between trenches: "The vertical interval between contour trenches is fixed at 1m".

Thus, with a constant vertical interval of 1m, the contour trenches would be spaced at a horizontal interval of 20m on a 5% slope and 10m on a 10% slope. However, one must not follow this rule blindly without taking into account the catchment area that each contour trench has to handle. For example, on high slopes one may end up making too many trenches even though there is very little water, which each trench needs to handle. And on low slopes, very few trenches are made which however are unable to intercept most of the runoff, since each trench is expected to do much more than its fair share of work. In practice, thus, one must fix the maximum and minimum horizontal interval between the two successive contour trenches in a way, which is depicted as follows:

- On high slopes, the trenches should be close to each other but never closer than 10 m.
- On low slopes, the trenches should be far from each other but never farther than 30 m.

Thumb rule for the vertical interval between two rows:

V.I.= Slope (%)/C, where value of C = 12 for the medium rainfall.

It is commonly expressed in term of vertical interval (V.I.), which is defined as the difference in elevation between the two similar points on two consecutive bunds. The basic principle involved in fixing the spacing between the two bunds is to keep the velocity of runoff below the critical value, which creates scour.

Vertical Interval is usually expressed as:

$$V.I. = 0.305 \times [(S/a) + b]$$

Where V.I. = Vertical Interval in meter, S = Slope in percent, a and b = constants specific to particular region. For soil with good infiltration rates values of a and b are respectively taken as 3 and 2; whereas for soils of low infiltration rates the corresponding value are 4 and 2, respectively.

Staggered vs Continuous Trenching:

Over time, experience of watershed programmes has shown that it is better to stagger the digging of contour trenches. This is because it has been found that invariably errors have been made in contouring over long distances.

Therefore, instead of making trenches continuously, they should be made in a staggered and discontinuous manner. Dig a trench 4 m long on a contour line. Give a gap of 4 m and dig another 4 m trench along the contour. The trenches are further dig in the similar fashion along this particular contour. Then, come to the next contour line. Begin digging in a stretch, which covers the gap left in the higher contour line. The gaps in this contour line should fall below the trenches in the higher contour line. In this way, we maximize the amount of harvested runoff by the trenches. In other words, chains of staggered trenches should be made along successive contour lines so that water left by one line of trenches is captured by the immediately lower line and so on.

In areas where there is an abundance of trees and vegetation, gaps in excavation are in any case essential to allow space for the roots of the trees to

spread. Also, where there are hard rocks underneath the soil, trenches must be staggered.

12.6.3 DRAINAGE LINE INTERVENTIONS

These interventions are implemented along the existing drainage lines with an objective to enhance the recharge of groundwater and increase the duration of flow in the drainage line. Some general considerations should be borne in mind while selecting the site for locating structures on the drainage line:

- The width of the drainage line at that point should be narrow.
- The width of the drainage line upstream of the point should be more considerable.
- The embankments at that point should be clearly defined, stable and high.
- The upstream bed slope of the drainage line should be low.
- The upstream bed of the drainage line should be made up of impervious material if the principal aim is to harvest water for irrigation. On the other hand, if the main aim is to increase the rate of groundwater recharge, this material will be relatively pervious.
- Ideally in structures where waste weirs have to be constructed, the substrata of the nala banks should be hard enough; so that the banks of the weir do not easily get eroded.
- In all those structures where overtopping is allowed, it is to be ensured that the height of the structure plus the depth of peak flow in the stream is habitually less than the height of the embankments.
- Always locate a structure at such a point, where the construction material of requisite size and quantity are adequately available.

Some of the Drainage Line Interventions include:

1. Where the local bed slopes are above 20% and where thinning operation yields adequate raw material: brushwood checks
2. Where local bed slopes are between 5-20%
 - a. If boulders are freely available: dry boulder checks
 - b. If boulders are not freely available: boulder cum earthen checks
3. Where local bed slopes are less than 5%
 - a. Nala bunds, which serve as percolation reservoirs in the upper catchment. These are to be located on pervious strata to improve vertical percolation.
 - b. Sand-filled bag structures to check the velocity of stream flow and where sand is locally available
 - c. Gabion structures where velocity and volume of peak run-off are excessively high for loose boulder structures
4. Where the stream embankments have been severely eroded
 - a. Nala draining, including deepening of channels and raising embankments, along sections of streams; especially where during peak floods, the stream flows over its embankments and damages the fields alongside.
 - b. Embankment stabilisation through gabions or sand-filled bag structures in stretches where the banks are exceptionally vulnerable and require reinforcement.
 - c. Where groundwater harvesting wells are located alongside
 - d. Underground dykes in the discharge zone where the impermeable strata are overlaid by a thin layer of permeable deposits.

12.6.3.1 DRAINAGE LINE TREATMENTS**Drainage Line Treatment with Boulder Checks:**

Boulder checks are loose rock dams made on small drainage lines, which have a catchment area of around 10 to 20 ha. As per rainfall parameters the permissible catchment area of the drain for the construction of loose boulder gully plug varies.

Objectives:

The main aim of constructing boulder checks is to reduce the velocity of water flowing through the drainage line. By reducing the velocity of runoff, boulder checks help in;

- Reduction in soil erosion.
- Trapping silt, which reduces the rate of siltation in water harvesting structures in the lower reaches of the watershed.
- Creating a hydraulic head locally which enhances infiltration of surface runoff into the groundwater system; and
- Increasing the duration of flow in the drainage line.
- Therefore, the capacity of the water harvesting structures created downstream on the drainage line is utilized more fully as they get many more refills.

Location:

- Boulder checks should be made as a series on a drainage line, with each structure dividing the overall catchments of the drainage line into smaller sections.
- The independent catchment of each boulder check should not be more than 1 to 2 ha.
- Boulder checks should not be made where the bed slope of the drainage line at that point is above 20% because the check will not be able to withstand the high velocity of water flow. However, on a

drainage line with an overall high bed slope boulder checks can be constructed in sections where the local bed slope is less than 20%.

- Boulder checks should be made where boulders are available in large quantities in the requisite size.
- A boulder check should be made where the embankments are well defined and stable, and high enough to accommodate peak flows even after the check has been made, thereby preventing water from rising over and cutting the banks. The height of the embankment at the location of the structure must at least equal the maximum depth of flow in the stream including the design height of the structure in the central portion of the drainage line. This rule is applicable to all structures in which overtopping is permissible.
- Even though storage is not a primary consideration in the case of boulder checks, enhanced water retention and groundwater recharge is a desirable objective. Hence, locating the structure in those sections in the drainage line, where the upstream slope is flatter may be advantageous. The flatter the upstream slope, the greater would be the storage per unit height of the structure.

Layout :

On each drainage line there will be a series of boulder checks. The minimum vertical interval between two successive checks on a drainage line should be equal to the height of the structure, so that the water temporarily stored in one check will reach the toe of the another check upstream. Any interval below this limit would mean under-utilization of the capacity of the downstream boulder check. What interval we keep above this limit would require a balance to be struck between cost considerations and volume of water to be stopped. Once this vertical interval is fixed, the horizontal interval between two successive checks would depend on the bed slope of the drainage line; for instance, with a constant vertical interval of 1m,

the boulder checks would be spaced at a horizontal interval of 20 m on a 5% slope and 10 m on a 10% slope. In general the relationship can be expressed as follows:

$$H.I. = V.I. / S$$

Where, H.I. = Horizontal Interval; V.I. = Vertical Interval and S = Slope (%)

However, one must not follow this rule blindly without taking into account the catchment area that each boulder check has to handle. For example, on high slopes one may end up making too many checks even though there is very little water which each checks needs to handle. In practice, one must fix the maximum and minimum horizontal interval between two successive boulder checks.

- On high slopes, boulder checks should be spaced close but not closer than 10 m
- As the slope decreases, boulder checks must be spaced farther, but not farther than 50 m

Planning:

Identify the drainage line to be treated by the checks. Start from the top. Fix the location of the topmost boulder check. Walk 5 m downstream. This gives the downstream bottom edge of the first boulder check. We have decided that the minimum horizontal distance between 2 boulder checks has to be 10 m. Measure the slope of the nala bed over the 10 m stretch, beginning with the bottom edge of the first boulder check.

If the slope is 10% or more, keep the horizontal distance between two boulder checks as 10 m. In case the slope is less than 10%, then increase the distance between the boulder checks, depending on the flatness of the slope. Thus, for instance, if the slope is 5%, the distance should be 20 m; if slope is 2%, the distance should be 50 m. Even if the slope is less than 2%, do not increase the distance beyond 50 m, which is the maximum distance we have fixed. Thus, along the length of the drain, the location of the checks is marked.

Drainage Line Treatment with Gabion structure:

Gabion structures are rock and wire dams constructed across the drainage lines with a catchment area of 30-150 ha. They are also constructed to reinforce highly erodible stream embankments.

(A) Gabion Structure across Drainage Line:

Objectives: The main aim of constructing gabion structures is to reduce the velocity of water flowing through the drainage line. By reducing the velocity of runoff, gabion structures help in:

- Reduction in soil erosion.
- Trapping silt, which reduces the rate of siltation in water harvesting structures in the lower reaches of the watershed.
- Creating a hydraulic head locally which enhances infiltration of surface runoff into the groundwater system; and
- Increasing the duration of flow in the drainage line. Therefore, the capacity of the water harvesting structures created downstream on the drainage line is utilized more fully as they get many more refills.

Location:

The minimum independent catchment area for a gabion structure is 5 ha. For a catchment area smaller than this even a loose boulder check may suffice. The precise location of a gabion structure depends on the following factors:

- Stability of the embankments is the primary consideration. The less stable and more erodible the material on the embankments is the weaker the structure is likely to be. In such a situation, making the structure stronger would render it too expensive.
- The elevation of side embankments from the bed of the stream at the least must equal the sum of the depth of peak flow in the stream and

the designed height of the structure. For example, if the height of the embankments is 6 m and the depth of peak flow is 4 m, then the height of the gabion must not exceed 2 m to prevent the water from jumping over the sides. Hence, observation of the peak flows is imperative before a gabion structure is planned.

- For maximizing storage in the structure, the bed slope of the upstream portion should be low. The flatter the upstream slope, the greater will be the temporary storage per unit height of the structure.
- The material composing the bed of the drainage line upstream of the structure should not be completely impermeable, because what we are looking for is temporary storage followed by groundwater recharge.

(B) Gabion Structure along Embankments:

These structures are built to cushion the impact of water, preventing it from eroding the banks. On very high slopes as in the Himalayas, such structures are built along the contour lines to prevent landslides. These should be located in those stretches where embankments are prone to severe erosion by the stream. Normally this happens where the stream turns sharply and its flows are directed towards the embankments. The length of the embankment to be strengthened has to be determined. Along this length the rectangular boxes have to be placed as a straight wall with a vertical face. The wall width could be a standard 1m while the length and height both are dependent on the local conditions. The height of this wall should be at least 1 m above the peak flood levels of the stream. The upstream end of the gabion wall should be well embedded into the embankment so that the stream is not able to cut a path behind the structure. Care must be taken that the gap between the structure and the embankment is filled with rammed earth while raising the rectangular structure.

Drainage Line Treatment with Earthen Water Harvesting:

In forest areas the commonly built earthen water harvesting structures are Percolation tanks.

Objectives of Percolation Structures:

Percolation structure is an earthen dam constructed to impound water flowing in a small drain or a medium drain for the primary purpose of increasing the rate of groundwater recharge. A percolation structure augments flows in the groundwater system by controlling the volume and velocity of surface water flow, thereby allowing water a greater time for percolation into the aquifer. This replenishment of groundwater benefits the irrigation wells situated downstream in the catchment. Enhanced groundwater recharge helps lengthen the life of the seasonal streams through regenerative base flows after the end of the rainy season. Depending on the capacity of the structure and duration of water storage, the pond can have secondary benefits (such as pisciculture) that are vital for the livelihood security of local communities.

Location: The location of earthen structures is determined on the basis of the following considerations:

- **Effective Storage:** The site for an earthen structure should be selected at a point where the total runoff is adequate to fill the structure to its full capacity, i.e., the total runoff should be at least greater than or equal to the 'effective' storage of the structure.
- $\text{Effective storage} = \text{Storage capacity} + \text{Volume of water percolating from it during one season} + \text{Evaporation} + \text{Water used for protective irrigation.}$
- Hence, an estimation of runoff from the catchment and the effective storage of the structure are essential to decide its location. On the other hand, it must also be ensured that the total runoff is not too large in relation to the effective storage of the structure, i.e., the structure should be able to hold most of the water flowing into it. A common mistake is to locate earthen

structures in such a place where the catchment area of the stream is very large so that the inflow of water is much higher than structure capacity. Such a structure would necessarily have to let most of its inflow out through a waste weir, which literally means that we end up leaving the entire nala. Therefore given the cost constraints no structure should be constructed where its effective storage is less than 50% of total runoff. Thus matching runoff and storage entails a knowledge about the topography of the catchment and the geology of the bed of the structure.

Embankments:At the point of location, the drainage line must have well defined embankments to which the structures can be anchored. Since the structure is embedded into them, these embankments should be strong and not made of loose material like sand.

- Slope of the Upstream Nala Bed: The bed slope should be relatively low (not more than 5%) upstream of the site selected for the earthen structure, in order to maximize storage capacity.
- Width of the Nala: At the site the embankment should be narrow and vertical. But as we move upstream, the nala should ideally widen so as to contain maximum storage within its banks.

Geology:Since the primary objective of structure is water storage, the geology of the structure must be favourable for water storage, i.e., percolation losses must be minimal up to reasonable depths. In cases where percolation losses are high and the storage structure makes sense only as a groundwater recharge structure, it is advisable to dig intake wells on the downstream to collect the percolating water. If the percolation losses are high but the strata, which can be tapped by dug wells, yield very little water, the site should be abandoned since a structure here will neither store surface runoff nor recharge wells. In the case of the percolation structure, however, the primary consideration is groundwater recharge. Therefore, we would ideally like the bed of the

structure to be made up of relatively pervious material. In both cases, the geology of the waste weir site should preferably be a hard rock so that it does not erode very easily.

Availability of Materials: Even if all other factors are favourable and if the requisite materials are not easily available, one may be compelled to abandon the site.

Type of earthen structures: Depending on the construction materials used, two types of structures can be constructed:

- **Structure made of Homogenous Material:** In places with an impervious foundation where availability of clay is virtually nil, structures can be made from a relatively more pervious material either by increasing the area of cross section, ramming the material to a greater extent or by providing a narrow clay blanket on the upstream side in order to control seepage.
- **Core Wall Type:** Where both the pervious and the impervious materials are available, the structure wall can be partitioned between these according to their relative abundance. Where the availability of impervious clayey soil is limited, one can choose to economize on clay by puddling. In the core wall type structure, there is a narrow, impermeable wall, extending from embankment to embankment and made of puddled clay that forms the core of the structure. To support and protect this, the outer flanks of the structure are made of dry or wet rammed coarser soils, which are arranged by grade. The finest particles being placed inside and the coarsest material is placed in graduating way towards the outside. The final shelter is provided by pitching, which involves giving a layer of boulders on the upstream face of the structure.

Forest Pond:

It is a water harvesting structure suitable for the plain area. Main purpose of the structure is to ensure water availability to wildlife.

Site Selection Criteria: Following are the criteria for the site selection of a dugout pond:

- Catchment area of the pond should be within 2 - 20 hectares.
- Soil strata up to 3 m depths should not be in the form of disintegrated rock or hard rock.
- If any well is present in the vicinity, then the pond should be on the upstream side of the well.
- Soil of the dugout should be impermeable so that water can be stored for a longer period.
- One thousand cubic meter (20 m x 20 m x 2.5 m) storage capacity of forest pond required for the protective irrigation of one hectare of the land. Five percent land is required for serving the said requirement. Beneficiaries should be selected as per the requirement of the land for the construction of forest pond.
- At least three to four hectares catchment area is required for storing 1000 cubic meter water in a forest pond.

Types of Forest Ponds:

- **Dugout Type:** Where the slope of the field is relatively low and there are no well-defined drainage channels, the pond will have to be created by excavation. The storage capacity will be confined to this excavated portion. Because of the low slope, there will be little storage above the ground level. Such ponds are best located in the lowermost portion. The runoff has to be directed into the pond through bunds or channels.
- **Trapezium Type Dugout Pond:** Size of the tank depends on the requirement of water to be stored. Depth of dug out pond depends

on the soil strata. Side slope of the dug-out pond depends on the angle of repose, generally 1:1 side slope is provided in cutting section.

- **Stepped Dugout Pond:** It is preferred in that location where community may use the pond for their daily work.
- **Dugout cum Embankment Type:** Where there is no well-defined channel and the slope of the land is medium, the pond should be of the dugout cum embankment variety. Here, the mud excavated should be used to form an embankment all around the pond except at the inlet. At the full reservoir level, the water level will be higher than the ground level and the embankment will serve as a retaining wall. Therefore, even while the dugout portion will be a significant part of the total storage volume, there will be some storage above the dugout portion retained by the embankments.

The main difference between the embankment and dugout types of farm ponds is that the dugout variety can be made in virtually any topographic situation without reference to the drainage line. As for the design, the freeboard in a dugout pond refers to the difference between the base of the waste weir and the top of the dugout portion of the structure. The freeboard is given mainly to prevent water from flowing into nearby fields during flash floods. Since the main storage is not through the bund, most of the discussion regarding bund parameters becomes redundant. But a certain degree of care has to be exercised in order to protect the pond from erosion by the intense rainfall and the sloughing action of the receding water. Here, the same considerations apply as in determining the slope of the dugout area. If the pond face is made of a material, which has a low angle of repose, it should be cut at an appropriate angle to form a series of steps. The resultant reduction in the pond capacity is to be balanced against the considerations of stability. Pitching should also be done where required. Where percolation losses are high, it may be advisable to allow a layer of transported soil to get deposited on the pond bed during the initial year. By acting as a clay blanket, this layer would reduce percolation losses. In subsequent years, a silt trap can be made in the inlet channel. The inlet channel

should be lined with boulders to make it safe against erosion. Before the channel reaches the pond, a silt trap should be placed either by digging a trench or through constructing a boulder check.

Precautions:

- Catchment area should be treated for the soil conservation interventions otherwise pond will silt up.
- It should be constructed on small drain or the first order drain.
- If the dugout pond is used for meeting daily water requirements then stepped type dugout should be preferred.
- Select the deep pond instead of a shallow pond. Exit of a dug out pond should be at the ground level and side of the embankment should be protected with stone pitching.
- Dugout soil should be stacked in the form of embankment with a one-meter berm.

Cement Nala Bunds:

This is a permanent structure having long life sustainability. The work of cement nala bunding helps raise ground water level and prevents soil erosion.

Check dams are constructed across small streams having gentle slope and are feasible both in hard rock as well as alluvial formations. The site selected for check dam should have sufficient thickness of permeable bed or weathered formation to facilitate recharge of stored water within short span of time. The water stored in these structures is mostly confined to stream course and the height is normally less than 2 m. These are designed based on stream width and excess water is allowed to flow over the wall. In order to avoid scouring from excess run off, water cushions are provided at downstream side. To harness the maximum run off in the stream, series of such check dams can be constructed to have recharge on regional scale.

A series of small bunds or weirs are made across selected nala sections such that the flow of surface water in the stream channel is impeded and water is retained on pervious soil/ rock surface for longer body. Nala bunds are constructed across bigger streams of second order in areas having gentler slopes. A nala bund acts like a mini percolation tank.

Site Characteristic and Design Guidelines:

For selecting a site for Check Dams/ Nala Bunds the following conditions may be observed:

- The total catchment of the nala should normally be between 40 to 100 hectares though the local situations can be guiding factor in this.
- The rainfall in the catchment should be less than 1000 mm/annum.
- The width of nala bed should be atleast 5m and not exceed 15m and the depth should not be less than 1 metre.
- The soil downstream of the bund should not be prone to water logging and should have pH of 6.5 to 8.
- The nala bunds should be preferably located in area where contour or graded bunding of lands have been carried out.
- The rock strata exposed in the pond area should be adequately permeable to cause ground water recharge through pond water.
- Nala bund is generally a small earthen dam with a cut-off core wall of brick work, though masonry and concrete bunds/ plugs are now prevalent.
- For the foundation for core wall a trench is dug 0.6m wide in hard rock or 1.m in soft rock of impervious nature. A core cement concrete wall is created 0.6 m wide to stand at least 2.5m above nala bed and the remaining portion of trench is back filled on upstream side by impervious clay. The core wall is buttressed on both sides by a bund

made up of local clays and on the upstream face, stone pitching is done.

- Normally the final dimensions of the nala bund are: length 10 to 15m, height 2 to 3m and width 1 to 3m, generally constructed in a trapezoidal form. If the bedrock is highly fractured, cement grouting is done to make the foundation leakage free.
- Dams should be built at sites that can produce a relatively high depth to surface area so as to minimise evaporation losses.
- Rocky surfaces should not be fractured or cracked, which may cause the water to leak away to deeper zones or beneath the dam.
- Dam foundation must be of solid impermeable rock with no soil pockets or fracture lines.
- Dams should be located along the edges of depressions or directly across the lower ends of deep gullies into the rock.

12.7 ENCROACHMENT

The problem of encroachment is common in almost all the areas specially the forest areas located adjoining to habitations. The problem of encroachment is because of lack of appropriate survey and demarcation on the ground, the greed of the people and the apathy of local people towards Government lands. There have been large scale clearances of the forests in the past for encroachment with a view to obtain agricultural crops. The state government has issued orders in 1978 and 1979 to regularize all encroachments on forest lands done during the period from 01.04.1972 to 31.03.1978. This increased the tendency of people to encroach upon the forest land with a hope that in future also such encroached lands will be regularized by the Government. The enactment of the FRA, 2006 has also further fragmented the forest land. The total of 245.93 ha forest area in Jodmoha, North Arni, South Arni, Darwha and Yavatmal ranges is found under encroachment in Yavatmal Division. Encroachment anywhere irrespective of size, should be removed

as per law. In order to mitigate the problem, it is essential to take up survey and clear demarcation works on top priority. Precast pillars of Class-I and Class-II type shall be erected after the survey is over which can be completed in a phased manner. The existing cairns shall be repaired and maintained under 1/5th boundary demarcation scheme. The powers that were entrusted to the officers of Assistant Conservator of Forests and above rank under Sec. 53 and 54 of Land Revenue Code will effectively be utilized. The encroachment, if any, can be tried summarily and evicted as early as possible.

The following instructions shall be followed regarding encroachments.

1. Special care shall be taken to ensure protection of such patches from encroachment. The civil powers of eviction are entrusted to ACF and DCF. The procedure laid out in the Land Revenue Code shall be followed before the execution of eviction. Habitual encroachers shall be prosecuted as per Indian Forest Act. 1927.
2. All external boundaries shall be demarcated with concrete pillars. All sensitive and important boundaries and wherever disputes exists, be surveyed and concrete pillars be laid immediately.
3. All encroachers shall be listed with their names, age, residence, profession, whether belongs to SC, ST, OBC/NT, extent of encroachment, survey no. and location of encroachment, village/block etc.
4. A detailed report of the case be prepared for each encroacher and submitted to ACF to obtain summary eviction orders in a time bound programme.
5. After the completion of due procedure under Land Revenue Code and after giving a reasonable opportunity of being heard to the encroacher, ACF shall pass a summary eviction order if he/she satisfies so quoting the findings.
6. The concerned RFO shall execute the eviction order.

7. If the encroachments in a village are more in number, police protection will be obtained for the operation. Use of Cr. P.C. provisions like section 106 and 110 be used to smoothen the eviction operations as well as to prevent the tendency of future encroachments.
8. For the encroachments on the un-classed forests (though 7/12 shows clear possession of the department) FIR shall be lodged in the concerned police station for the prosecution.
9. Regularisation of the encroachments made earlier to 1980 be settled as early as possible and necessary proposals be submitted to Government.
10. After the listing of all encroachments, sample verification shall be carried out by all supervisory officers to detect unregistered encroachments.
11. In the month of May, a drive for encroachment prevention be taken up in all the sensitive areas by taking meetings in the villages, distribution of leaflets and posters.
12. Keep a watch on all the sites meant for debris cleaning, ploughing etc., in the month of May, so that encroachments are removed even before the sowings.

The boundary management and standard administrative guidelines will help to control the encroachment. RFO must inspect at least 50% of the boundary demarcation, ACF at least 10% of the boundary demarcation, DCF at least 2% of the boundary demarcation. RFO Mobile Squad shall check 2 % of the boundary demarcation.

In order to release the forest land from the burden of illegal encroachment, it is imperative to not to lose sight of this important issue. Therefore, to have close monitoring of various activities to be continuously taken under the drive in the division, information shall be submitted to Conservator of Forests, Yavatmal on monthly basis in proforma as given in **Appendix No.X (B)** of Volume-II.



12.8 GRAZING

Fire and grazing hamper the success of regeneration of forest to a great extent. To control grazing, grazing units are formed in the Division. The number of cattle heads is fixed as per the carrying capacity of the area. In the Yavatmal Forest Division, heavy cattle population pressure has degraded the forests. The Government of Maharashtra formulated the grazing policy vide its resolution no. MFP-1365/1322-Y, Dt. 6/12/1968 and the grazing rules were framed vide its G.R. no. MFP/137/237035-Z, Dt. 3/11/1973.

The main felling coupes of all working circles will remain closed for a period of 10 years from the main felling as felling cycle is fixed at 20 years i.e. 1/4th area of the felling series will remain closed for grazing at any time. All the forests are not possible to open for grazing at a time and as the cattle population is not uniformly distributed therefore, it is prescribed that the cattle exceeding carrying capacity of an area open for grazing should not be allowed to enter into the forest. The excess cattle units can be managed through fodder development activity on common community lands and waste lands. The villagers shall be persuaded to go for stall feeding of some of their cattle which are more than carrying capacity of the forest adjoining to them and local people shall be educated and made aware of ill-effects of excessive grazing on forests growth. Apart from this the forest staff should open a dialogue with the local villagers to discuss regarding grazing policy, carrying capacity of forests and the area available to graze their cattle in the adjoining forests. The DCF should consider all the factors and prepare a consolidated plan based on area, cattle units, carrying capacity, rotational grazing and avenue for excess cattle units.

The above cannot be achieved without the active participation of the people. The role of JFMCs and the rapport of the field officers/staff is very important for the success of containing grazing. Closing of the area of natural regeneration from grazing should be strictly followed.

12.9 MAINTENANCE OF THE FOREST LAND RECORDS

Maintenance of the Land Records and Forest Maps:

The forestland records and the forest maps will be maintained properly and updated periodically. A certificate to this effect will be recorded annually in the Form No 1- Register during the month of June.

Forest Notification:

Non-forest areas transferred for the compensatory afforestation shall be immediately, proposed for notification as Reserved Forests, and the reservation process shall be initiated with the section 4 notification under the provisions of Indian Forest Act, 1927.

Reconciliation of the Revenue Records:

The revenue records will be reconciled on the basis of the forest notifications. The Collector and the Deputy Conservator of Forests will jointly ensure that the Revenue Records are brought up to date according to the forest notifications. Since the Divisional Commissioner issues the forest notifications, there is no apparent need to issue separate orders for the mutation entries. The Revenue Department will provide a certified copy of the Records of Rights to the Yavatmal forest division to mark completion of the process.

Along with the reconciliation, the details of land grants (patta) issued on the forestland will also be made available to the division office.

CHAPTER 13

FINANCIAL FORECAST

The prescriptions of this working plan confirms to the emphasis laid in the National Forest Policy 1988. It lays emphasis on protection and conservation of forests, catchment treatment of rivers and streams, preservation of natural forests, increase in productivity of forests, increase in forest cover, protection of rights and concessions of people, tribals, meeting the requirements of people for small timber, fuelwood, NTFP etc. Various prescriptions have been given to achieve the objectives. The implementation of prescription of this working plan will incur expenditure on establishment, execution of works and also generate ecological services as indirect benefit and revenue and sale proceeds of different produce.

13.1 EXPENDITURE

Expenditure on establishment: To run proper administration, an efficient administrative set up is needed. It is a recurring expenditure on the salary and other benefits to officials and staff, maintenance of offices, vehicles, roads, buildings, machines, communication facilities etc.

Expenditure on harvesting forest produce and other activities: During the implementation of the prescriptions forest produce is to be harvested. In SCI and other working circles forest produce in the form of timber, firewood, and other produce like tendu leaves, gums etc will be harvested. The activities incur expenditure on harvesting.

The sources of funds during the last Plan were Plan Schemes, Non-Plan schemes, CAMPA, District Plan (DPDC), MGNREGA, special projects like Jalyukt Shivar, etc. The expenditure and revenue during the implementation of the past working plan period is given in the table below.

**TABLE NO. 13.1 : DETAILS OF EXPENDITURE, REVENUE AND SURPLUS OVER THE
PREVIOUS PLAN PERIOD**

Year	Revenue (Rs in lakh)	Expenditure in (Lakh)			Total Expenditure in Rs. Lakhs (3+4+5)	Surplus (+) or Deficit(-) in Rs. Lakhs (2-6)
		Conservancy & Work (in Rs. Lakhs)	Establish- ment (in Rs. Lakhs)	Plan (in Rs. Lakhs)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2012-13	2217.35	708.02	1239.19	1573.63	3520.85	-1303.5
2013-14	182.38	543.37	1472.21	928.04	2943.61	-2761.23
2014-15	637.82	688.29	1362.41	1996.04	4046.74	-3408.92
2015-16	455.61	919.96	1569.8	2520.45	5010.2	-4554.59
2016-17	972.6	1012.26	1642.71	850.1	3505.07	-2532.47
2017-18	383.09	603.27	1692.41	2025.64	4321.32	-3938.23
2018-19	547.16	755.27	1918.29	2435.19	5108.75	-4561.59
2019-20	308.56	756.54	2281.86	1288.03	4326.42	-4017.86
2020-21	143.6	759.79	2213.32	2847.33	5820.44	-5676.84
2021-22	112.8	463.95	2612.87	1743.7	4820.52	-4707.72
Total	5960.97	7210.72	18005.07	18208.15	43423.92	-37463

13.2 FORECAST

Since the expenditure on various items is linked with the wage rate and the prevailing salaries of the staff and officers, it is not possible to work out expenditure on all the specific items. The forecast is based on certain assumptions like quantum of work, areas to be tackled, wage rate etc. Based on assumptions like these, the following calculations are made. These are symbolic and not final figures.

FINANCIAL FORECAST

Estimated Annual Expenditure (details) for the Working plan implementation in Yavatmal Division.

Selection–cum-Improvement Working Circle

Expected expenditure during the plan period

Sr. No.	Particulars of work	Avg. Quantum of work	Unit	Man days/ unit	Rate/unit (Rupees)	Annual (Rs. In Lakh)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Average (Rs. In Lakh)	Man-days generated
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	Coupe marking																	
1a	Demarcation & Treat map	2100	Ha.	2	876.84	18.41	18.41	19.33	20.30	21.32	22.38	23.50	24.68	25.91	27.21	28.57	23.16	4200
1b	Enumeration & marking	1050	Ha.	2.5	1096.05	11.51	11.51	12.08	12.69	13.32	13.99	14.69	15.42	16.19	17.00	17.85	14.48	2625
2	Coupe working																	
2a	Timber harvesting	3546	Cum.	8.4	3682.73	130.59	130.59	137.12	143.97	151.17	158.73	166.67	175.00	183.75	192.94	202.59	164.25	29786
2b	Firewood extraction	1063.8	Stacks	1.63	714.62	7.60	7.60	7.98	8.38	8.80	9.24	9.70	10.19	10.70	11.23	11.79	9.56	1734
3	Natural Regeneration																	
3a	PPO/PYO (Pre-planting work)	400	Ha.	31	13591.02	54.36	54.36	57.08	59.94	62.93	66.08	69.38	72.85	76.50	80.32	84.34	68.38	12400
3b	FYO(First Year Operation)	400	Ha.	20.38	8935.00	35.74	35.74	37.53	39.40	41.37	43.44	45.61	47.90	50.29	52.80	55.44	44.95	8152
4	Soil and Moisture Conservation work																	
	100 cum/ Coupe	2600	Cum.	0.92	403.35	10.49	10.49	11.01	11.56	12.14	12.75	13.38	14.05	14.76	15.49	16.27	13.19	2392
4	ANR																	
4a	PPO/PYO (Pre-planting work)	650	Ha.	171.44	75162.72	488.56	488.56	512.99	538.63	565.57	593.84	623.54	654.71	687.45	721.82	757.91	614.50	111436
4b	FYO(First Year Operation)	650	Ha.	73.06	32030.97	208.20	208.20	218.61	229.54	241.02	253.07	265.72	279.01	292.96	307.61	322.99	261.87	47489

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
4c	SYO(Second Year Operation)	650	Ha.	55.41	24292.85	157.90	0.00	165.80	174.09	182.79	191.93	201.53	211.61	222.19	233.30	244.96	182.82	36017
4d	TYO (Third Year Operation)	650	Ha.	58.88	25814.17	167.79	0.00	0.00	184.57	193.80	203.49	213.66	224.35	235.56	247.34	259.71	176.25	38272
5	Cutback Operation	1050	Ha.	5	2192.10	23.02	23.02	24.17	25.38	26.65	27.98	29.38	30.85	32.39	34.01	35.71	28.95	5250
6	Artificial Regeneration																	
6a	PPO/PYO (Pre-planting work)	200	Ha.	456.07	199950.21	399.90	399.90	419.90	440.89	462.93	486.08	510.39	535.90	562.70	590.84	620.38	502.99	91214
6b	FYO(First Year Operation)	200	Ha.	127.28	55802.10	111.60	0.00	117.18	123.04	129.20	135.66	142.44	149.56	157.04	164.89	173.13	129.21	25456
6C	SYO(Second Year Operation)	200	Ha.	73.22	32101.11	64.20	0.00	0.00	70.62	74.15	77.86	81.75	85.84	90.13	94.64	99.37	67.44	14644
6d	TYO (Third Year Operation)	200	Ha.	57.52	25217.92	50.44	0.00	0.00	0.00	58.00	60.90	63.95	67.14	70.50	74.03	77.73	47.22	11504
6e	4 th YO (Fourth Year Operation)	200	Ha.	39	25217.92	50.44	0.00	0.00	0.00	0.00	60.52	63.55	66.73	70.06	73.57	77.24	41.17	11504
6f	5 th YO(Fifth Year Operation)	200	Ha.	39	17098.38	34.20	0.00	0.00	0.00	0.00	0.00	42.75	44.88	47.13	49.48	51.96	23.62	7800
7	Cleaning	1050	Ha.	8	3507.36	36.83	0.00	0.00	0.00	0.00	0.00	46.03	48.34	50.75	53.29	55.95	25.44	8400
					Total :-		1388.38	1740.78	2083.02	2245.17	2417.95	2627.63	2759.01	2896.96	3041.81	3193.90	2439.46	470275

Note :-

1. 50 % of the coupe area is assumed to be D type area.
2. Man-days for Fire Protection will be sanctioned after preparing "Fire Protection Plan" for the entire division.
3. Wage rate is considered as Rs 438.42 with 5% annual increase. The fund requirement will vary as per prevailing wage rate.
4. NR, ANR and AR shall be carried out as per site conditions requirement and staff capacity.
5. The above items are only indicative and not exhaustive. DCF can change the quantity shown as per site requirements.
6. NR Model is based on 13th Finance Commission report.
7. 5A (1111 model) is used for AR.

FINANCIAL FORECAST

Estimated Annual Expenditure (details) for the Working plan implementation in Yavatmal Division.

Improvement Working Circle

Expected expenditure during the plan period

Sr. No.	Particulars of work	Avg. Quantum of work	Unit	Man days/unit	Rate/unit (Rupees)	Annual (Rs. In Lakh)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Average (Rs. In Lakh)	Man-days generated
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	Coupe marking																	
1a	Demarcation & Treat map	550	Ha.	2	876.84	4.82	4.82	5.06	5.32	5.58	5.86	6.16	6.46	6.79	7.13	7.48	6.07	1100
1b	Enumeration & marking	275	Ha.	2.5	1096.05	3.01	3.01	3.16	3.32	3.49	3.66	3.85	4.04	4.24	4.45	4.68	3.79	688
2	Coupe working																	
2a	Timber harvesting	195	Cum.	8.4	3682.73	7.18	7.18	7.54	7.92	8.31	8.73	9.17	9.62	10.10	10.61	11.14	9.03	1638
2b	Firewood extraction	100	Stacks	3.5	1534.47	1.53	1.53	1.61	1.69	1.78	1.87	1.96	2.06	2.16	2.27	2.38	1.93	350
3	Natural Regeneration																	
3a	PPO/PYO (Pre-planting work)	100	Ha.	31	13591.02	13.59	13.59	14.27	14.98	15.73	16.52	17.35	18.21	19.12	20.08	21.08	17.09	3100
3b	FYO(First Year Operation)	100	Ha.	20.38	8935.00	8.93	8.93	9.38	9.85	10.34	10.86	11.40	11.97	12.57	13.20	13.86	11.24	2038
4	ANR																	
4a	PPO/PYO (Pre-planting work)	175	Ha.	171.44	75162.72	131.53	131.53	138.11	145.02	152.27	159.88	167.88	176.27	185.08	194.34	204.05	165.44	30002
4b	FYO(First Year Operation)	175	Ha.	73.06	32030.97	56.05	56.05	58.86	61.80	64.89	68.13	71.54	75.12	78.87	82.82	86.96	70.50	12786
4c	SYO(Second Year Operation)	175	Ha.	55.41	24292.85	42.51	0.00	44.64	46.87	49.21	51.67	54.26	56.97	59.82	62.81	65.95	49.22	9697

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
4d	TYO (Third Year Operation)	175	Ha.	58.88	25814.17	45.17	0.00	0.00	49.69	52.18	54.79	57.53	60.40	63.42	66.59	69.92	47.45	10304
6	AR																	
6a	PPO/PYO (Pre-planting work)	100	Ha.	456.07	199950.21	199.95	199.95	209.95	220.45	231.47	243.04	255.19	267.95	281.35	295.42	310.19	251.50	45607
6b	FYO(First Year Operation)	100	Ha.	127.28	55802.10	55.80	0.00	58.59	61.52	64.60	67.83	71.22	74.78	78.52	82.45	86.57	64.61	12728
6C	SYO(Second Year Operation)	100	Ha.	73.22	32101.11	32.10	0.00	0.00	35.31	37.08	38.93	40.88	42.92	45.07	47.32	49.69	33.72	7322
6d	TYO (Third Year Operation)	100	Ha.	57.52	25217.92	25.22	0.00	0.00	0.00	29.00	30.45	31.97	33.57	35.25	37.01	38.86	23.61	5752
6e	4 th YO (Fourth Year Operation)	100	Ha.	39	25217.92	25.22	0.00	0.00	0.00	0.00	30.26	31.77	33.36	35.03	36.78	38.62	20.58	5752
6f	5 th YO(Fifth Year Operation)	100	Ha.	39	17098.38	17.10	0.00	0.00	0.00	0.00	0.00	21.37	22.44	23.56	24.74	25.98	11.81	3900
4	Soil and Moisture Conservation work																	
	100 cum/ Coupe	600	Cum.	0.92	403.35	2.42	2.42	2.54	2.67	2.80	2.94	3.09	3.24	3.41	3.58	3.75	3.04	552
					Total :-		429.04	553.72	666.41	728.73	795.43	856.57	899.40	944.37	991.59	1041.17	790.64	153315

FINANCIAL FORECAST
Estimated Annual Expenditure (details) for the Working plan implementation in Yavatmal Division.
Afforestation Working Circle
Expected expenditure during the plan period

Sr. No.	Particulars of work	Avg. Quantum of work	Unit	Man days/unit	Rate/unit (Rupees)	Annual (Rs. In Lakh)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Average (Rs. In Lakh)	Man-days generated
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	Demarcation and treatment map	850	Ha.	2	876.84	7.453	7.4531	7.8258	8.2171	8.6279	9.0593	9.5123	9.9879	10.487	11.012	11.562	9.3745	1700
2	Coupe working (Hygienic Felling)																	
2a	Timber harvesting	85	Cum.	8.4	3682.73	3.13	3.13	3.29	3.45	3.62	3.80	4.00	4.19	4.40	4.62	4.86	3.94	714
2b	Firewood extraction	40	Stacks	3.5	1534.47	0.61	0.61	0.64	0.68	0.71	0.75	0.78	0.82	0.86	0.91	0.95	0.77	140
3	Natural Regeneration																	
3a	PPO/PYO (Pre-planting work)	100	Ha.	31	13591.02	13.59	13.59	14.27	14.98	15.73	16.52	17.35	18.21	19.12	20.08	21.08	17.09	3100
3b	FYO(First Year Operation)	100	Ha.	20.38	8935.00	8.93	8.93	9.38	9.85	10.34	10.86	11.40	11.97	12.57	13.20	13.86	11.24	2038
4	ANR																	
4a	PPO/PYO (Pre-planting work)	100	Ha.	171.44	75162.72	75.16	75.16	78.92	82.87	87.01	91.36	95.93	100.73	105.76	111.05	116.60	94.54	17144
4b	FYO(First Year Operation)	100	Ha.	73.06	32030.97	32.03	32.03	33.63	35.31	37.08	38.93	40.88	42.92	45.07	47.32	49.69	40.29	7306
4c	SYO(Second Year Operation)	100	Ha.	55.41	24292.85	24.29	0.00	25.51	26.78	28.12	29.53	31.00	32.55	34.18	35.89	37.69	28.13	5541
4d	TYO (Third Year Operation)	100	Ha.	58.88	25814.17	25.81	0.00	0.00	28.40	29.82	31.31	32.87	34.52	36.24	38.05	39.96	27.12	5888

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
6	AR																	
6a	PPO/PYO (Pre-planting work)	200	Ha.	456.07	199950.21	399.90	399.90	419.90	440.89	462.93	486.08	510.39	535.90	562.70	590.84	620.38	502.99	91214
6b	FYO(First Year Operation)	200	Ha.	127.28	55802.10	111.60	0.00	117.18	123.04	129.20	135.66	142.44	149.56	157.04	164.89	173.13	129.21	25456
6C	SYO(Second Year Operation)	200	Ha.	73.22	32101.11	64.20	0.00	0.00	70.62	74.15	77.86	81.75	85.84	90.13	94.64	99.37	67.44	14644
6d	TYO (Third Year Operation)	200	Ha.	57.52	25217.92	50.44	0.00	0.00	0.00	58.00	60.90	63.95	67.14	70.50	74.03	77.73	47.22	11504
6e	4 th YO (Fourth Year Operation)	200	Ha.	39	25217.92	50.44	0.00	0.00	0.00	0.00	60.52	63.55	66.73	70.06	73.57	77.24	41.17	11504
6f	5 th YO(Fifth Year Operation)	200	Ha.	39	17098.38	34.20	0.00	0.00	0.00	0.00	0.00	42.75	44.88	47.13	49.48	51.96	23.62	7800
4	Soil and Moisture Conservation work																	
	100 cum/ Coupe	600	Cum.	0.92	403.35	2.42	2.42	2.54	2.67	2.80	2.94	3.09	3.24	3.41	3.58	3.75	3.04	552
					Total :-		543.24	713.09	847.76	948.15	1056.08	1151.63	1209.22	1269.68	1333.16	1399.82	1047.18	206245

1. D Area is assumed to be 10%

FINANCIAL FORECAST

Estimated Annual Expenditure (details) for the Working plan implementation in Yavatmal Division.

Fodder Improvement Working Circle

Expected expenditure during the plan period

Sr. No.	Particulars of work	Avg. Quantum of work	Unit	Man days/unit	Rate/unit (Rupees)	Annual (Rs. In Lakh)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Average (Rs. In Lakh)	Man-days generated
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1	Demarcation and treatment map	620	Ha.	2	876.84	5.44	5.44	5.71	5.99	6.29	6.61	6.94	7.29	7.65	8.03	8.43	6.84	1240
	Fodder Nursery (CAMPA model)																	
2	Fodder Nursery	1800000	Tus-socks	4674.6	11.38	20.48	20.48	21.51	22.58	23.71	24.90	26.14	27.45	28.82	30.26	31.78	25.76	4675
	Fodder Plantation (CAMPA model)																	
3	PPO/PYO (Pre-planting work)	300	Ha.	134.4	58923.65	176.77	176.77	185.61	194.89	204.63	214.87	225.61	236.89	248.73	261.17	274.23	222.34	40320
4	FYO(First Year Operation)	300	Ha.	218.4	95750.93	287.25	287.25	301.62	316.70	332.53	349.16	366.62	384.95	404.19	424.40	445.62	361.30	65520

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
5	SYO(Second Year Operation)	300	Ha.	146.64	64289.91	192.87	0.00	202.51	212.64	223.27	234.43	246.16	258.46	271.39	284.96	299.20	223.30	43992
6	Soil and Moisture Conservation work																	
	100 cum/ Coupe	700	Cum.	0.92	403.35	2.82	2.82	2.96	3.11	3.27	3.43	3.60	3.78	3.97	4.17	4.38	3.55	644
					Total :-		492.77	719.92	755.92	793.71	833.40	875.07	918.82	964.76	1013.00	1063.65	843.10	156391

Estimated Annual Expenditure (in Rs Lakhs) for the Working plan implementation in Yavatmal Division

Boundary Demarcation

Sr. No.	Particulars of work	Avg. Quantum of work	Unit	Man days/ unit	Rate/unit (Rupees)	Annual (Rs. In Lakh)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Sum	Average (Rs. In Lakh)	Mandays generated
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1a	Establishing cement boundary pillars	5944	Class I	4.5	438.42	117	117	123	129	136	143	150	157	165	173	182	1475	147	26748
1b	Establishing cement boundary pillars	8916	Class II	2.5	438.42	98	98	103	108	113	119	125	131	138	144	152	1229	123	22290
1c	New Demarcation of Non Forest Land For C.A. And undemarcated Protected Forest	250 Ha/ Year	Ha.	10 Pillar /Ha.	15000 /Ha	37.5	38	39	41	43	46	48	50	53	55	58	472	47	-
Total						252	252	265	278	292	307	322	338	355	373	392	3176	318	49038

Revenue Forecast of Yavatmal Forest Division

Sr. No.	Working Circle	Approximate Expected yield (Annual)						Avg. Unit Price in Rupees (As per Schedule of Rates)					
		Timber (CUM)		Beat (CUM)		Poles (Number)		Timber (per CUM)		Beat (per CUM)		Poles (per pole)	
		Teak	Non Teak	Teak	Non Teak	Teak	Non Teak	Teak	Non Teak	Teak	Non Teak	Teak	Non Teak
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1	SCI	3546	106	1064	32	4000	120	50000	5000	3000	1200	200	50
2	IWC	195	6	100	3	200	6	50000	5000	3000	1200	200	50
	Total :	3741	112	1164	35	4200	126						

Sr. No.	Working Circle	Approximate Annual Revenue (Rs. In Lakh)						Grand Total
		Timber		Beat		Poles		
		Teak	Non Teak	Teak	Non Teak	Teak	Non Teak	
(1)	(2)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
1	SCI	1773	5.32	32	0.38	8	0.06	1819
2	IWC	97.5	0.29	3	0.04	0.4	0.00	101
	Total :	1871	5.61	35	0.42	8.4	0.06	1920

Note- The expected Annual Revenue would vary as per the prevailing market prices.

CHAPTER 14

SCIENCE AND RESEARCH

During the process of writing of this Plan various papers, articles, reports and documents were referred from these sources and used for the writing of the Plan.

- Annual administration report of Maharashtra Forest Department, 2021-2022.
- Carbon Statistics of India
- Central Ground Water Board (CGWB)
- Geological Survey of India (GSI)
- Ground water survey and Development Agency (GSDA)
- Indian Forester
- Indian Institute of Forest Management, Bhopal (IIFM)
- Maharashtra Remote Sensing Application Centre (MRSAC)
- National Bureau of Soil Survey and Land use Planning (NBSSLUP)
- Social Forestry, Agriculture, Animal Husbandry, Water resources departments, Yavatmal
- State of Forest Report 2017, 2019 and 2021
- Supreme Court Orders
- Survey of Forest Resources (SOFR), Amravati
- Twelfth Five Year Plan document under Environment, Forestry and Wildlife 2009
- Maharashtra Forest Manual.

During the preparation of working plan various research gaps have been noticed. Forests in Yavatmal district and Yavatmal division in specific were managed on scientific lines since long. But modern concepts in forest management have changed the way forests are being managed. Working plan requires specific inputs on various topics. As per the Working Plan Code, 2014 many new chapter have been added for which information was not available with the division. There is a lack of research works/paper related to Yavatmal forest division. The research gap is in almost every aspect of the Working Plan as previous plans have not looked into the new aspects. Various aspects such as carbon stock, carbon sequestration, sacred grooves, biodiversity, climate change, NTFP research, indigenous knowledge, trees outside forests, social and cultural aspects of forests, ecosystem services etc. were found to be wanting in information.

14.1 PRESERVATION PLOTS

Preservation plots, the miniature nature reserves, are demarcated forest areas set aside for the preservation of the forest in perpetuity permitting only such human interference as is necessary for their protection and maintenance. Following the recommendations of the 3rd All India Silvicultural Conference, preservation plots in the representative areas of chief forest types were marked. By 1939, about 112 preservation plots were established throughout the country, when concept of preservation of both climatic and seral types was generated. In 1961, during the 10th All India Silvicultural Conference, emphasis was laid on preservation of fine specimens of forests i.e. groups of out-standing trees, rare types of forests of botanical curiosity and patches of relict vegetation, specimens of managed forests (stable sub-climax stages) and climax forests.

Preservation plots in Maharashtra have been established as early as 1955 and as of 1993, there are 23 preservation plots in Maharashtra covering an area of 517.32 ha. There are no preservation plots in Yavatmal Forest Division. The following points are recommended for creation of preservation plots.

- The division should be surveyed to identify the area under specific forest types to be made as preservation plot. The plot size shall be of not less than 4.0 ha and to a maximum of 20 ha.
- The plot should be well-demarcated on the ground, geo-referenced and plotted on a GIS-based map. The trees on the border should be demarcated with such demarcation as were marked in the other preservation plots in the country/state.
- These plots shall be spared from all human interference including harvesting operations, if prescribed in the Plan. Activities shall be limited to those that would ensure protection and maintenance.
- A total enumeration of the plot shall be taken up taking into account all the tree species of the forests (species, age-class distribution, height, etc.)
- The forests shall also be described in a proper manner as to its species composition, condition of the crop, health and vitality, presence of pests etc.
- The shrubs and herbs present in the plot should be well-documented. This shall include the lower life-forms.
- The fauna available in the area should also be surveyed and documented.

14.2 SAMPLE PLOTS

For forest resource assessment in the working plan, sample plots are systematically laid out in the forest area which is indicated on the Survey of India toposheet on the scale of 1:50000. The statistical sampling method namely "Systematic line plot sampling" with random start was used. The plot size of 50" x 50" (50 seconds x 50 seconds) representing approximately 225 ha on the ground was laid. The complete enumeration of trees, natural regeneration, grass and medicinal species was carried out. Similarly, qualitative measurements were also carried out.

These are distributed in different Working Circles under different ranges and are well-distributed throughout the division. A total of 1596 sample plots were laid down. The details are given in **Appendix No. XXXII**. These plots shall be monitored and data collected on a periodic basis. The normal prescriptions that are prescribed in the Plan area are allowed to be carried out in these plots and the impact of the implementation of such prescriptions should be recorded and monitored.



14.3 REGENERATION PLOTS

Selection of Plots: The sample Plots have been surveyed and in 3 x 3 m sub-plots, information was recorded for regeneration. In these plots, regeneration will also be studied during the plan period. This will make the monitoring and data collection easier as well.

Data to be Collected: Regeneration plots are established to study the regeneration status of important species.

- Data should be collected on population dynamics of seedlings, saplings and young trees.
- Each seedling and sapling should be marked individually.
- The marked seedlings should be measured and monitored periodically.
- The status of growth, their health and conditions should be measured in detail.
- The conditions of soil (depth, humus content etc), presence of litter, the canopy opening level, should be recorded properly.
- The incidences of pest should be recorded.
- Any threat and outside interference like fire, grazing etc should be recorded.

- The monitoring should be done periodically, the period of which should be decided in consultation with the SOFR unit and the Research wing.

14.4 NTFP PLOTS

There are no specific NTFP plots in Yavatmal Forest Division.

14.5 OTHER RESEARCH AND EXPERIMENTAL PLOT

There are no seed orchards, clonal seed orchards established in the division till date.

CHAPTER-15

CONTROL AND RECORDS

15.1 CONTROL AND RECORDS

The following records shall be maintained in the division office.

1. Control forms
2. Compartment History
3. Plantation registers
4. Nursery Registers
5. Divisional Note Book.
6. Boundary registers.

15.2 CONTROL FORMS

Control forms shall be prepared to include each of working plan prescriptions as well as definite suggestions regarding other operations. All activities of harvesting, subsidiary silvicultural operations, cleaning, thinning, regeneration works, boundary demarcation and soil and moisture conservation works carried out shall be recorded in the control forms. The prescribed proforma of the control forms is given in **Appendix No XXXV** of Volume-II.



Three permanent sets of these control forms shall be prepared. One set each in division office, DCF (Working plan) office and CF (Territorial) office. DCF (T) Yavatmal will annually make entries in the control forms and send it to the Working Plan Officer by August of every year. All the entries showing the deviation from the prescription of working plan will be underlined in red ink. The Working Plan Officer will scrutinise it and process further.

15.3 COMPARTMENT HISTORIES

Compartment history is the record of various activities and observations made in the past year. They shall be maintained in forms No. 1 to 5 as given in **Appendix No. XXXVI** of Volume-II.



FORM NO. 1 : Compartment description written by Working Plan Officer, Yavatmal as per his/her inspections.

FORM NO. 2 : Record of changes in the growing stock and plantations.

FORM NO. 3 : Record of operations and out turn.

FORM NO. 4 : Record of observations.

FORM NO. 5 : Record of injuries.

Each compartment or sub compartment must have a separate file. Compartment history must be maintained by the division office and range office as they keep the record of past management practices and their effects on the growing stock. Every year in July the RFO should fill in the necessary information and shall send them to the DCF who will get them scrutinised by an officer not below the rank of ACF, get them typed and sign them. One copy of the forms will be filled in the divisional compartment history file and another copy will be returned to the RFO. The copies of the compartment history files shall be sent to the Working Plan office, Yavatmal annually by the month of August.

15.4 PLANTATION AND NURSERY REGISTERS

Plantation register will be maintained for all the areas regenerated artificially in the form No. 1 to 9 as given in **Appendix No. XXXVII** of Volume-II.



Nursery registers will be maintained in Form No. 1 to 10 as given in **Appendix No. XXXVIII** of Volume-II.



15.5 DIVISIONAL NOTEBOOK

It is desirable for the DCF to maintain certain journals and records for ready reference. These journals are important for controlling and monitoring various activities of expenditure. A brief note on the plantation will also be recorded by the DCF under the appropriate heads. The form of the Divisional NoteBook is given in **Appendix No. XXXIX** of Volume-II.



15.6 FIRE RECORDS

They should be maintained as per the latest orders from the State Government from time to time.

15.7 OTHER RECORDS

List of amendments to the working plan and list of area changes will be maintained in prescribed forms.

CHAPTER-16

TREES OUTSIDE FOREST

16.1 INTRODUCTION

An accurate assessment of forest and tree resources in the country is essential for formulating sound strategies for the forestry sector. Precise data and latest information on forest cover and volume of growing stock of forests/trees and trends of changes therein are basic ingredients for policy and planning purposes. Generally, extensive tree wealth exists outside continuous forested areas in every country. Termed as “Trees Outside Forests” (TOF), these are in the form of small woodlots and block plantations, trees along linear features, such as roads, canals bunds, etc. and scattered trees on farmlands, homesteads, community lands and urban areas. Traditionally, these were not inventoried and little quantitative information existed about TOF. However, lately a lot of interest has been generated worldwide on TOF. Besides providing support to the rural economy, these trees are now a source of substantial forest produce in every country. Tree population along avenues has been taken up extensively since the early 1950s mainly along roads, railway tracks, bunds, canals, riverbanks, in parks, in blocks and other blank areas. Farm forestry, agro-forestry and wasteland afforestation activities have subsequently increased the tree wealth of the state.

TOF Area:All lands (rural and urban) outside the Recorded Forest Area.

TOF (Rural):The TOF area includes all areas outside the traditional /notified Reserved and Protected Forests but excludes areas of Municipality, Corporation, Cantonment Board or a notified area Committee etc. which has population more than 5000 and more than 75% male working population are engaged in non-agricultural occupation.

TOF(Urban): The definition of urban area is same as followed in the decennial Population Census of Urban areas in 1991 Census and consist of:

- I. All places with a Municipality, Corporation, and Cantonment Board or Notified Town Area Committee etc

- II. All other places which satisfy the following criteria: A minimum population of 5000 At least 75% of male working population being engaged in non-agricultural (and allied) activities; and, A population density of at least 400 persons per sq.km (or 1,000 per sq.mile)
- III. Places having distinct urban characteristics such as major project colonies, areas of intensive industrial development, railway colonies, important tourist centres - even though such places may not strictly satisfy the criteria of (a) & (b) under (ii).

The total geographical area of the division is 477920.43 ha and the forest area is 83534.61 ha. which is about 17.47% of the total geographical area of the division. This is way below the targeted 33% forest cover as per the National Forest Policy, 1988.

Forest Survey of India (FSI) is one of the few organizations in Asia that has been carrying out TOF assessments. Social Forestry Department (SFD) of the State has the mandate for the forestry outside forest area. Since the early 1980s the SFD has carried innumerable plantation and plantation-drives across the state. It has not only conducted such plantations but has backed-up with good awareness and extension efforts which have borne fruits in many ways. The SFD has been carrying out plantations in the private areas since 1982 in which include block plantations, agricultural bund planting and road-side plantations which form a substantial quantity and forest cover in the areas outside forest.



From 2012-13 to 2021-22, Social Forestry Wing of Yavatmal division has carried out roadside plantation of 907.5 kms and block plantation of 693 hectares. The details of these plantations and plantations undertaking by Municipal Councils in Yavatmal Forest Division are provided in **Appendices No.VII (A),VII (B)& VII (C).**



16.2 TO INCREASE FOREST/TREE COVER

In tune with the objectives of our National Forest Policy 1988 we have to achieve a national target of bringing 33% of landmass of our country under forest and tree cover for ensuring ecological security and environmental balance. However, forest cover and tree cover in India has over the years stabilized at around 23 % of geographical area and Yavatmal forest division has about 17% of the total geographical area under forest cover. The area under forest and forest land is difficult to increase.

The only way left for the increase of forest cover and tree cover has to be through afforestation activities in non-forest areas. The areas outside forests comprises mainly of private farm forests, canal bank areas, road side strips, railway line side strip, blank and degraded land, wasteland etc. Apart from increasing the tree cover, extension of forestry in non forest areas especially as agro-forestry and farm forestry has tremendous potential to increase production of timber and other wood products and reduce the pressure on natural forests. The options for increasing Trees outside Forest have been mentioned below.

16.3 AGROFORESTRY

Agroforestry is a collective name for land-use systems and technologies where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land-management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence. In agroforestry systems there are both ecological and economical interactions between the different components. Agroforestry can also be defined as a dynamic, ecological based, natural resource management system that, through the integration of trees on farms and in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels. In particular, agroforestry is crucial to marginaland small farmers and other rural people because of its potential to enhance their food supply, income and health. Agroforestry is a low-input system which combines trees with crops in various combinations or sequences.

Agroforestry also has the potential to reduce risk through diversification of a variety of products, including food, fuel wood and animal fodder. Agroforestry combines agriculture and forestry technologies to create more integrated, diverse, productive, profitable, healthy and sustainable land-use systems. Agroforestry systems are multifunctional systems that can provide a wide range of economic, socio-cultural, and environmental benefits. The three main types of agroforestry systems are -

1. **Agrisilvicultural System:** It is a combination of crops and trees, such as alley cropping or home gardens.
2. **Silvopastoral System:** It combines forestry and grazing of domesticated animals on pastures, rangelands or on-farm.
3. **Agrosylvopastoral system:** It includes an integrated approach of trees, animals and crops.

16.4 ROADSIDE/ CANAL-SIDE PLANTATIONS

This is an important component of the work of the Social Forestry Department. During the previous plan period, the Social Forestry Yavatmal division has taken up 2204.3 kms of roadside plantations.

16.5: BLOCK PLANTATIONS: During the past working plan period Social forestry Yavatmal division has carried out 1339.87 hectares of block plantation.

16.6: OTHER MODELS AND PLANTATIONS: The following types of Agroforestry possibilities should also be explored as per the site conditions and the requirement of the people.

- I. Boundary/Bunds Plantation: Trees on boundary + crops
- II. Energy plantation: Trees + crops during initial year
- III. Alley cropping: Shrubs + crops
- IV. Agri-horticulture: Fruit trees + crops

- V. Agri-horti-silviculture: Trees + fruit trees + crops
- VI. Horti-pasture: Fruit trees + pasture/animals
- VII. Shelterbelts: Trees +/- crops
- VIII. Windbreaks: Trees +/- crops
- IX. Homesteads: Multiple combinations of trees, fruit trees etc.

16.7 SUGGESTIVE STEPS FOR INCREASING TREES OUTSIDE FORESTS

- I. Identification of the fallow lands, culturable and unculturable wasteland range/taluka-wise in agricultural land which is available for taking up afforestation.
- II. Drawing up appropriate time specific action plan is essential, which will require the involvement of the Social Forestry Department and the Agriculture Department alongwith the Forest Department.
- III. Farmers must be encouraged and motivated by way providing them incentives, technical assistance and cooperation from Forest Department for taking up planting trees.
- IV. Land laws, if any, should be so modified wherever necessary so as to facilitate and motivate individuals and institutions to undertake tree-farming and grow fodder plants, grasses and legumes on their own land.
- V. Schemes like “Kanya Van Samruddhi” should be undertaken which promotes planting trees on birth of girl child in lands outside forest area.
- VI. Wherever possible, degraded lands should be made available for agroforestry purpose either on lease or on the basis of a tree-patta scheme. Steps necessary to encourage them to do so must be taken.

Appropriate regulations governing the felling of trees on private holdings should be appropriately relaxed.

- VII. High quality planting stock including clonal planting stock supported with improved silvicultural management practices can usher in a second green revolution in India with respect to tree crops for timber, fuel-wood and fodder production. This critical requirement of genetically improved high quality planting stock should not be neglected, which will impact productivity and quality.
- VIII. People's support in forest conservation should be recognized by the state forest department. And appropriate extension programmes should be undertaken to motivate and make them conscious of the value of trees, wildlife and nature in general. This can be achieved through the involvement of educational institutions, Krishi Vigyan Kendras, mass media, audio-visual aids and the extension machinery. Trainers' Training Centres to learn agri-silvicultural and silvicultural techniques should be developed to ensure optimum utilisation of land and water resources.
- IX. The wood based industries have an important role to play in the development of agroforestry. They should consider making appropriate arrangements with farmers and play a facilitative role in arranging quality planting material and enter into buy back arrangements.
- X. Preferred tree under agroforestry by farmers which are not naturally available in neighbouring forests may be exempted from the transit permit and felling regulations.
- XI. The possibility of a Public-Private Partnership in regenerating the culturable wasteland and barren unculturable wastelands should be explored. This can also be explored for raising the improved planting material for supply to the farmers.



सत्यमेव जयते

GOVERNMENT OF MAHARASHTRA

YAVATMAL
WORKING SCHEME 2022-23
(DRAFT)



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CHAPTER – 1

AREA DEALT WITH- LOCATION

This WP deals with all the Reserved Forests, Protected Forests and Unclassed Forests of Yavatmal Forest Division. These forests occupy western and southern portion of Yavatmal District. There are 7 talukas in this division namely Yavatmal, Babhulgaon, Ner, Kalamb, Ghatanji, Darwaha and Arni.

The present day Yavatmal Forest Division was a part of old Yavatmal Forest Division. In the year 1964 the old Yavatmal Forest Division was reorganized into two separate forest divisions i.e. East Yavatmal and West Yavatmal Forest Divisions. Subsequently in the year 1983 reorganization of Forest Department was affected and three Forest Divisions were created namely Yavatmal Forest Division, Pusad Forest Division and Wani Forest Division (later on renamed as Pandharkawada Forest Division) out of East Yavatmal and West Yavatmal Forest Divisions. The total geographical area of the division is 4779.20 sq.km. The Yavatmal Forest Division lies between the longitude 77°31' and 78°34' east and latitude 19°52' and 20°42' north.

The Yavatmal division consists of 8 ranges viz. Yavatmal, Hiwari, Ner, Darwaha, Wadgaon Dh., Jodmoha, North Arni and South Arni. These 8 ranges consist of 32 Rounds, 126 Beats & 521 Compartments. Some compartments adjoining to Yavatmal (T) division are managed by FDCM.

Boundaries :

The boundaries of the division are given below

- North : Dhamangaon taluka of Amravati district
- North -East : Deoli taluka of Wardha district
- North -West : Nandgaon-Khandeshwar taluka of Amravati district
- West : Karanja taluka of Washim district.
- South-East : Pandharkawda taluka of Yavatmal district
- South -West : Digra taluka of Yavatmal district
- South : Kinwat taluka of Nanded district

CHAPTER – 2

DETAILS OF FOREST LAND

Yavatmal Forest Division comprises of South Arni, North Arni, Darwha, Hiwari, Jodmoha, Wadgaon, Ner and Yavatmal Ranges.

The total forest area of Yavatmal Division as on date is **83301.06 ha.** out of which **80781.16 ha.** is reserved forest, **308.41 ha.** is protected forests and **2211.49 ha.** is unclassified forests.

1. Total geographical area Yavatmal Division	477920.43 Ha.
2. Total forest area of Yavatmal Forest Division	93424.89 Ha.
3. Area transferred to FDCM Ltd.	10123.83 Ha.
4. Area in charge of Yavatmal Forest Division.	
a. Reserved Forest	- 80781.16 Ha.
b. Protected Forest	- 308.41 Ha.
c. Unclassed Forest	- 2211.49 Ha.
5. Total Area dealt for Working Scheme	83301.06 Ha.

Present Area of Yavatmal Forest Division

Sr. No.	Range	Total Area		Reserved forest area in (Ha.)	Protected forest area in (Ha.)	Un classed forest area in (Ha.)
		No. of Compts.	Area in (Ha.)			
1	Yavatmal	68	8863.77	8852.92	10.85	0
2	Hiwari	47	11511.70	11511.70	0	0
3	Wadgaon Dh.	26	7231.74	6902.20	0	329.54
4	Jodmoha	54	13496.50	11596.38	297.56	1602.56
5	Ner	71	7178.08	7122.07	0	56.01
6	Darwha	173	15177.58	15059.13	0	118.45
7	North Arni	49	10688.87	10656.38	0	32.49
8	South Arni	33	9152.82	9080.38	0	72.44
	Total :-	521	83301.06	80781.16	308.41	2211.49

CHAPTER – 3

DESCRIPTION OF THE FOREST CROP

The forests of Yavatmal Forest Division belong to the following types as per the classification of Champion & Seth:

Group 5 Tropical dry deciduous Forests; Sub group 5A Southern Tropical dry deciduous forests

Climax types (1) 5A Cia Dry Teak bearing forests and Teak Forests.

(2) 5A Cib Dry Teak forests degraded scrub forests.

The majority of the forest area of the division belongs to site quality IV b with small pockets of site quality IV a interspersed in depressions and valleys. The site quality III is also found. *Tectona grandis* (teak) is the principal species forming 56% of the total crop. Other species that occur are *Ain* (*Terminalia alata*), *Dhawada* (*Anogeissus latifolia*), *Tiwas* (*Ougeinia oojeinensis*), *Lendia* (*Lagerstroemia parviflora*), *Khair* (*Acacia catechu*), *Tendu* (*Diospyros melanoxylon*), *Bhirra* (*Chloroxylon swietenia*), *Beheda* (*Terminalia bellirica*), *Bija* (*Pterocarpus marsupium*) and *Bel* (*Aegle marmelos*). The forest crop is uneven aged consisting growing stock of all age classes of trees.

Upper Storey :

Teak (*Tectona grandis*) is a dominant species and principal associates are: *Ain* (*Terminalia alata*), *Dhawada* (*Anogeissus latifolia*), *Tiwas* (*Ougeinia oojeinensis*), *Lendi* (*Lagerstroemia parviflora*), *Tendu* (*Diospyros melanoxylon*), *Kalam* (*Mitragyna parvifolia*), *Satpudi* (*Dalbergia paniculata*), *Bhirra* (*Chloroxylon swietenia*), *Rohan* (*Soymida febrifuga*) *Semal* (*Bombax ceiba*), *Beheda* (*Terminalia bellirica*), *Sisham* (*Dalbergia latifolia*), *Bija* (*Pterocarpus marsupium*), *Bel* (*Aegle marmelos*).

Under Story :

Trees: *Amaltas* (*Cassia fistula*), *Awala* (*Embllica officinalis*), *Char* (*Buchanania lanzan*), *Dudhi* (*Wrightia tinctoria*), *Ghoti* (*Ziziphus xylopyrus*), *Palas* (*Butea monosperma*) *haman* (*Grewia tiliaefolia*), *Moyen* (*Lannea grandis*), *Bartondi* (*Morinda tinctoria*), *Lokhandi* (*Ixora parviflora*)

Shrubs :

Bharati (*Gymnosporia montana*), Parijatak (*Nyctanthes arbor-tristis*), Murudsheng (*Helicteres isora*), Dhayati (*Woodfordia fruticosa*), Raymuniya (*Lantana camara*), Tendu (*Diospyros melanoxylon*).

Grass :

Bhurbhusi (*Eragrostis amabilis*), Kodmor (*Apluda varia*), Marvel (*Andropogon annulatus*), Dub (*Cynodon dactylon*), Paonya (*Sehima sulcatum*)

Climbers :

Palasvel (*Butea superba*), Mahul (*Phanera vahlii*), Piluki (*Combretum ovalifolium*), Chilati (*Acacia pennata*), Iruni (*Ziziphus oenoplia*), Guni (*Abrus precatorius*), Rankand (*Dioscorea bulbifera*), Randraksh (*Vitex tenuifolia*)

Distribution of the wild life :

Heavy biotic pressure and consequent deterioration of forests, have adversely affected the wildlife in this tract. During summer, water is scarce in forests and is confined to only few places. The wild animals noticed in the tracts are :-

(A) **Carnivores** – Tiger (*Panthera tigris*), Panther (*Panthera pardus*), Hyaena (*Hyaena hyaena*), Wild dog (*Cuon alpinus*), Indian forest jackal (*Canis aureus*), Indian fox (*Vulpes bengalensis*), Wolf (*Canis lupus pallipes*), Jungle cat (*Felis chaus*), Mongoose (*Genus Herpestes*).

(B) **Herbivores** - Black buck (*Antelope cervicapra*), Spotted deer (*Axis axis*), Blue bull (*Boselaphus tragocamelus*), Sambar (*Cervinus unicolor*), Chausingha (*Tetra Ceros quadricornis*), Sloth bear (*Melursus ursinus*), Wild boar (*Sus scrofa*), Common langur (*Presbytis pileatus*), Indian hare (*Lepus nigricollis*), Barking deer (*Muntiacus Muntjak*), Chinkara (*Gazella Beennetti*), Porcupine (*Hystrix Indica*), Langur (*Presbytis entellus*).

(C) **Birds**- Pea Fowl (*Pavo cristatus*), Jungle fowl (*Gallus sonneratii*), Painted partridge (*Francolinus pictus*), Common quail (*Coturnix coturnix*), Crow pheasant (*Centropus sinensis*), Spotted owl (*Athene brama*), Civet (*Viverridae*).

(D) **Reptiles** - Red sand boa (*Eryx conicus*), Indian cobra (*Naja naja*), Python (*Python molurus*), Rat snake (*Ptyas mucosus*).

CHAPTER – 4

ANALYSIS AND VALUATION OF THE CROP

The data obtained during stem analysis has been utilised to determine harvestable girth, felling cycle and expected yield. The data of stem analysis pertaining to girth, height, volume etc are given in the following tables.

Details of stem analysis of teak trees of site quality III (coppice origin)

Range : Hiwari, Jodmoha, Yavatmal Forest Divisio, compartmentss: 271, 339							
Conducted by Shri. V.N.Choudhary R.F.O., W.P.Yavatmal							
Sr.no.	Age	Height (m)	dbh ob cm	gbh ob cm	Volume m ³	CAI m ³	MAI m ³
1	2	3	4	5	6	7	8
1	5	4.80	4.00	12.56	0.020		0.0040
2	10	6.90	8.90	27.94	0.041	0.0042	0.0041
3	15	8.50	12.00	37.68	0.064	0.0046	0.0042
4	20	10.20	14.50	45.53	0.093	0.0058	0.0046
5	25	11.40	16.90	53.06	0.123	0.0060	0.0049
6	30	12.50	18.80	59.03	0.161	0.0076	0.0053
7	35	13.50	20.60	64.68	0.201	0.0080	0.0057
8	40	14.50	22.40	70.33	0.240	0.0078	0.0060
9	45	15.50	24.00	75.36	0.282	0.0080	0.0062
10	50	16.40	25.40	79.75	0.350	0.0100	0.0070
11	55	17.10	26.60	83.52	0.412	0.0124	0.0074
12	60	17.90	28.00	87.92	0.483	0.0142	0.0080
13	65	18.60	29.10	91.37	0.540	0.0114	0.0083
14	70	19.30	30.10	94.91	0.581	0.0082	0.0083
15	75	19.90	31.50	97.34	0.614	0.0066	0.0081
16	80	20.40	32.10	98.91	0.642	0.0056	0.0080
17	85		32.60	100.79	0.663	0.0042	0.0078
18	90		33.00	102.36	0.683	0.0040	0.0075
19	95		33.40	103.62	0.700	0.0034	0.0073
20	100			104.87	0.713	0.0026	0.0071

Stem analysis for teak of site quality III- Teak trees of (seed origin)							
Range :-Hiwari, Jodmoha				Compartment: 271,339			
Conducted by Shri. V.N.Choudhary R.F.O., W.P, Yavatmal							
Sr.no.	Age	Height (m)	dbh(ob) cm	gbh(ob) cm	Volume m³	CAI m³	MAI m³
1	2	3	4	5	6	7	8
1	5	5.00	2.60	8.16	0.010		0.0020
2	10	7.20	5.50	17.27	0.022	0.0024	0.0022
3	15	8.90	8.00	25.12	0.033	0.0030	0.0022
4	20	10.40	10.40	32.65	0.048	0.0030	0.0024
5	25	12.00	12.60	39.56	0.063	0.0030	0.0025
6	30	13.30	14.70	46.15	0.090	0.0054	0.0037
7	35	14.60	17.00	53.38	0.130	0.0080	0.0037
8	40	15.80	19.10	59.97	0.176	0.0092	0.0044
9	45	16.90	21.30	66.88	0.228	0.0104	0.0050
10	50	17.90	23.20	72.84	0.306	0.0156	0.0061
11	55	18.80	25.00	78.50	0.393	0.0174	0.0071
12	60	19.40	26.50	83.21	0.480	0.0174	0.0080
13	65	20.00	28.00	87.92	0.523	0.0140	0.0080
14	70	20.80	29.50	92.63	0.590	0.0134	0.0084
15	75	21.20	30.90	97.02	0.650	0.0120	0.0086
16	80	21.50	32.10	100.79	0.700	0.0120	0.0087
17	85		33.40	104.87	0.740	0.0100	0.0087
18	90		34.60	108.64	0.780	0.0080	0.0086
19	95		35.70	112.09	0.810	0.0060	0.0085
20	100		36.80	115.55	0.840	0.0060	0.0084

Stem analysis for teak of site quality IV (coppice origin)							
Range: Yavatmal, Kihli beat				Compartment : 498			
Conducted by Shri. A.R. ZANJAD, R.F.O.,W.P, Yavatmal							
Sr. no.	Age	Height (m)	dbh (ob) cm	Gbh (ob) cm	Volume m³	CAI m²	MAI m³
1	2	3	4	5	6	7	8
1	5	2.6	3.1	9.73	0.006	--	0.0012
2	10	4.4	6.0	18.84	0.012	0.0012	0.0012
3	15	5.7	8.4	26.37	0.022	0.0020	0.0014
4	20	7.0	10.5	32.97	0.034	0.0024	0.0017
5	25	8.1	12.4	38.93	0.050	0.0032	0.0020
6	30	9.1	14.2	44.58	0.070	0.0040	0.0023
7	35	10.0	16.1	50.55	0.092	0.0044	0.0026
8	40	11.0	17.8	55.89	0.118	0.0052	0.0029
9	45	12.0	19.4	60.91	0.144	0.0052	0.0032
10	50	12.8	20.8	65.31	0.174	0.0060	0.0035
11	55	13.7	21.9	68.76	0.206	0.0064	0.0037
12	60	14.4	22.9	71.90	0.240	0.0068	0.0040
13	65	15.2	23.7	74.41	0.274	0.0068	0.0042
14	70	15.8	24.5	76.93	0.302	0.0056	0.0043
15	75	16.3	25.1	78.81	0.326	0.0048	0.0043
16	80	17.0	25.6	80.38	0.344	0.0036	0.0043

Stem analysis for teak of site quality IV – (Seed origin)							
Range: Yavatmal, Arni,				Compartment : 496, 24			
Conducted by Shri. A.R. ZANJAD, R.F.O., W.P, Yavatmal							
Sr.no,	Age	Height (m)	dbh (ob) cm	Gbh (ob) cm	Volume m³	CAI m³	MAI m³
1	2	3	4	5	6	7	8
1	5	4.3	4.6	14.46	0.016	-	0.0032
2	10	7.1	7.5	23.57	0.034	0.0036	0.0034
3	15	9.5	10.2	32.06	0.055	0.0042	0.0036
4	20	11.5	13.0	40.86	0.078	0.0046	0.0039
5	25	12.9	15.5	48.72	0.108	0.0060	0.0043
6	30	14.1	18.2	57.2	0.152	0.0088	0.005
7	35	15.2	19.8	62.23	0.200	0.0096	0.0057
8	40	16.2	21.7	68.20	0.248	0.0096	0.0062
9	45	17.0	23.1	72.6	0.296	0.0096	0.0065
10	50	17.7	24.3	76.37	0.348	0.0104	0.0069
11	55	18.3	25.3	79.52	0.408	0.0120	0.0074
12	60	18.8	26.2	82.34	0.456	0.0096	0.0078
13	65	19.3	27.0	84.86	0.492	0.0072	0.0076
14	70	19.7	27.7	87.06	0.517	0.0050	0.0074
15	75				0.537	0.0040	0.0071
16	80				0.552	0.0030	0.0069

CHAPTER – 5

PAST MANAGEMENT PRACTICES

In the year 1865, ACF was appointed for the whole Berar for administration of forests. Rules for protection from encroachments, grazing and felling were introduced in the year 1871. For the first time Malcom's WP was introduced in the year 1915-16.

Working Plans implemented in the past are given below:

- a. Malcom's WP 1915-16 to 1937-38
- b. Robinson's WP 1937-38 to 1955-56
- c. Thosre's WP 1955-56 to 1975-76
- d. Pal's WP for West Yavatmal Division 1976-77 to 1991-92
- e. Kanekar's WP for East Yavatmal Division 1982-83 to 1997-98
- f. Yadav's WP 2001-02 to 2010-11
- g. Rama Krishna Rao's WP 2012-13 to 2021-22

PART -II

CHAPTER – 6

BASIS OF PROPOSALS

6.1 Introduction - The duration of Yavatmal Working Plan (2012-13 to 2021-22) written by Shri G. Rama Krishna Rao IFS concluded on 31/03/2022. The PWPR for the upcoming Working Plan (2022-23 to 2031-32) has been submitted vide letter no. जा.क्र.उवसं(य)/कक्ष-1/सर्वे/1181/2021-22 यवतमाळ 445001 dated 17/12/2021. This PWPR is yet to receive approval from the Standing Consultative Committee and, as the preparation of DWPR requires considerable amount of time and any discontinuity in coupe working results in imbalance in silvicultural management, loss of employment to the locals, loss of revenue to the government etc., an annual Working Scheme is proposed for the gap-year.

The architects of G. Rama Krishna Rao's Working Plan have listed coupes for 20 years i.e. 10 years beyond the regular duration of plan period. In the absence of an approved working plan for the financial year 2022-23, this Working Scheme is being prepared to ensure continuation of scientific management of forests through working in Coupe XI areas.

The Scheme also reconciles the compartments after the 2014 reorganization of Forest Divisions in Yavatmal District. Being a supplement to the 2012-22 Working Plan, the Scheme limits itself to present areas in coupe XI of working circles requiring felling of trees. All the observations, calculations and management prescriptions pertaining to each working circle are expected to be derived from the previous working plan.

Forest policy, Wildlife (Protection) Act 1972, other relevant Acts and instructions, growing stock, availability of harvestable trees, wildlife management, protection related issues, silviculture, improving productivity & vegetation, conservation of endangered flora & fauna, staff etc were considered and prescriptions under various WC were formulated. The details of WC prescribed are given below (area assigned to WC is given in parenthesis).

Sr. No.	Working Circle	Area (ha.)
1.	Selection cum Improvement Working circle	1715.71
2.	Improvement Working Circle	443.8
3.	Afforestation Working Circle	970.05
4.	Fodder Improvement Working Circle	368.19

6.2 Salient features of each WC

6.2.1. Selection cum Improvement Working Circle:

Details of SCI WC

- Total Working series as per sanctioned plan: 28
- Number of coupes in each working series: 20
- Average coupe area is 80 ha.
- Total area of Coupe no XI : 1715.71 ha (58% area is >0.4 density, 42% below 0.4 density & blank)
- Average no. of trees per ha: 475 (teak : 269 trees)
- Average no. of trees above 75 cm girth : 44.7 trees.

Prescriptions:

(i) *Coupe area has to be divided into A, B, C & D categories.*

(ii) *Treatment of coupe area:*

SMC works shall be carried out in the entire coupe, closure for grazing for 5 years, fire protection etc.

A Category - steep slopes, 20 m both side banks of nala: no felling, carry out bamboo planting,

B Category - Under stocked area; Planting 50 % teak, 50% misc. species, SMC works, removal of dead trees retaining 2 dead trees per ha.

C Category - Pole crop, old plantation: no planting, thinning of old plantations & congested natural pole crop, CBO.

D Category - Well stocked area: No planting, area to be divided into grids, enumeration of trees, marking for felling as per marking rules, CBO, cleaning etc.

(iii) Marking Rules:

Harvestable girth at breast height for teak – coppice origin: 75 cm & seed origin: 120 cm

Harvesting of teak (coppice origin) 15 trees per ha, harvesting of teak (seed origin) 0.46 trees per ha; Felling of silviculturally available teak trees; Improvement felling of malformed trees; Felling of dead trees except 2 trees per ha; CBO, cleaning operations; No felling of non-teak species.

6.2.2. Improvement Working Circle:

- Total Working series as per sanctioned plan: 6
- Number of coupes in each working series: 20
- Average coupe area is 84 ha.
- Total area of Coupe no XI : 443.8 ha (52% area is >0.4 density, 48% below 0.4 density & blank)

The crop is young to middle aged with no silviculturally available teak trees for harvesting.

Prescriptions:

- (1) Treatment of A, B, C categories mostly on the lines of SCI WC
- (2) In D category area, improvement felling for removal of dead, malformed trees; no harvestable girth is prescribed; very less yield to be realised
- (3) Subsidiary silvicultural operations- CBO, thinning; AR, NR
- (4) SMC works in the entire coupe

6.2.3. Afforestation Working Circle:

- Total Working series as per sanctioned plan: 14
- Number of coupes in each working series: 20
- Total area of Coupe no XI : 970.05 ha

Most of the forest area is blank and some area has crown density below 0.4. The area has to be treated in 2 phases, carrying out operations as prescribed below.

Restorative phase: This phase will be for minimum of one year, TCM or live hedge or barbed wire fencing, SMC works, CBO, protection from fire and grazing are prescribed.

Productive phase: Productive phase is to be implemented for 5 years immediately after completion of restorative phase. Repairs of SMC works in first year, Pre-planting Operations, PYO works in 2nd year, followed by planting have to be done. Treatment of coupe shall be as given below.

A category: No felling except removal of dead trees retaining 2 dead trees per ha.

B category: No felling; Cutting of all live high stumps; Removal of dead trees retaining 2 dead trees per ha; Removal of undesirable undergrowth; Tending of root stock; SMC works and planting

C category: Thinning of old plantations and natural pole crop; removal of dead, malformed poles, no planting is prescribed.

D category: Reduce multiple coppice shoots to one per stool; cutback all live high stumps; removal of dead trees retaining 2 dead trees per ha; no planting.

6.2.4. Fodder Improvement Working Circle:

- Total Working series as per sanctioned plan: 5
- Number of coupes in each working series: 20
- Total area of Coupe no XI : 368.19 ha

Treatment of area under controlled grazing: One compartment is divided into 4 sections, every year one section shall be under treatment and remain closed for grazing for next 3 years. SMC works, wire fencing or live hedge fencing, removal of obnoxious weeds, thorny shrubs, unpalatable grass, ploughing suitable area, seed sowing of sheda, marvel, paunya or planting tussocks would be carried out. From 4th year onwards rotational grazing will be allowed from October to May.

Treatment of ramnas: Complete closure to grazing with TCM or barbed wire fencing, removing weeds, unpalatable grass; promoting palatable grass, cutting of grass from ramnas, grass be offered to Gram Panchayat at rates fixed by Government; local people to cut and take grass freely, fire protection etc.

CHAPTER – 7

WORKING CIRCLE WISE DESCRIPTION

Based on the objectives of management and method of treatment, the WC are prescribed. While assigning areas to various WC the enumeration data, stock mapping and the data of NDVI maps have been taken into consideration. The following WC are prescribed.

1. Selection Cum Improvement Working Circle.
2. Improvement Working Circle.
3. Afforestation Working Circle.
4. Fodder Improvement Working Circle.

(1) **Selection-Cum-Improvement WC:** These areas basically constitute both good and degraded forests mixed together in almost all the compartments and are capable of producing small size timber and fire wood. The basic aim of the treatment is to improve the condition of crop by tending existing natural regeneration, supplement it by artificial regeneration. The silviculturally available matured trees (above harvestable girth) in well stocked patches will be harvested. To improve the site quality and crop condition soil and moisture conservation measures are prescribed. Total area included in this working circle is 1715.71 ha.

(2) **Improvement WC:** In this category the forest area which requires treatment for improvement of crop is included and this area may be switched over to SCI WC in future. The total area included in this working circle is 443.8 ha.

(3) **Afforestation WC:** The basic objective of treatment is to increase vegetation cover, both in quality and quantity and to meet the local demand for small timber, fuel wood, fodder and other forest produce by undertaking suitable plantations in blank and under stocked areas. The forests in general are very poor, representing site quality IV. The total area assigned to this WC is 970.05 ha.

(4) **Fodder Improvement WC:** The main objective of this WC is to create grass Ramnas and to provide fodder of improved quality and sufficient quantity to local cattle population. The total area assigned to this WC is 368.19 ha.

SELECTION CUM IMPROVEMENT WORKING CIRCLE

Table showing the coupes formed under various working series in Selection-cum-Improvement Working Circle Coupe XI (Year 2022-23)

Sr.No.	Range	Felling Series	Compartment No.	Compartment Area	Coupe No.	Coupe Area
1.	North Arni	Anjankheda	43	255.37	XI	70.00
2.	North Arni	Bhansara	31	272.77	XI	70.00
3.	North Arni	Shakalgaon	315	320.92	XI	80.92
4.	Jodmoha	Ghui	345	373.12	XI	75.00
5.	Jodmoha	Yclabara	339	273.83	XI	90.00
6.	Jodmoha	Watbori	375	390.11	XI	70.11
7.	Jodmoha	Durg	341	474.29	XI	80.00
8.	South Arni	Kelzara	21	309.59	XI	80.00
9.	South Arni	Belora	22	444.77	XI	90.00
10.	South Arni	Sawali	5	193.85	XI	95.00
11.	South Arni	Malegaon	6	321.74	XI	81.74
12.	Yavatmal	Hiwari	407	218.94	XI	80.00
13.	Yavatmal	Waghapur	471	230.67	XI	80.00
14.	Wadgaon Dhanora	Sukali	334	366.24	XI	90.00
15.	Wadgaon Dhanora	Rajur	331	383.64	XI	70.00
16.	Wadgaon Dhanora	Kharad	502	543.09	XI	80.00
17.	Hiwari	Jawala	268	173.21	XI	90.00
18.	Hiwari	Ghatana	307	424.52	XI	90.00
19.	Hiwari	Manpur	498	399.02	XI	80.00
20.	Hiwari	Dhanora	301	322.94	XI	82.94
21.	Hiwari	Kolambi	313	469.03	XI	90.00
Total				7161.66		1715.71

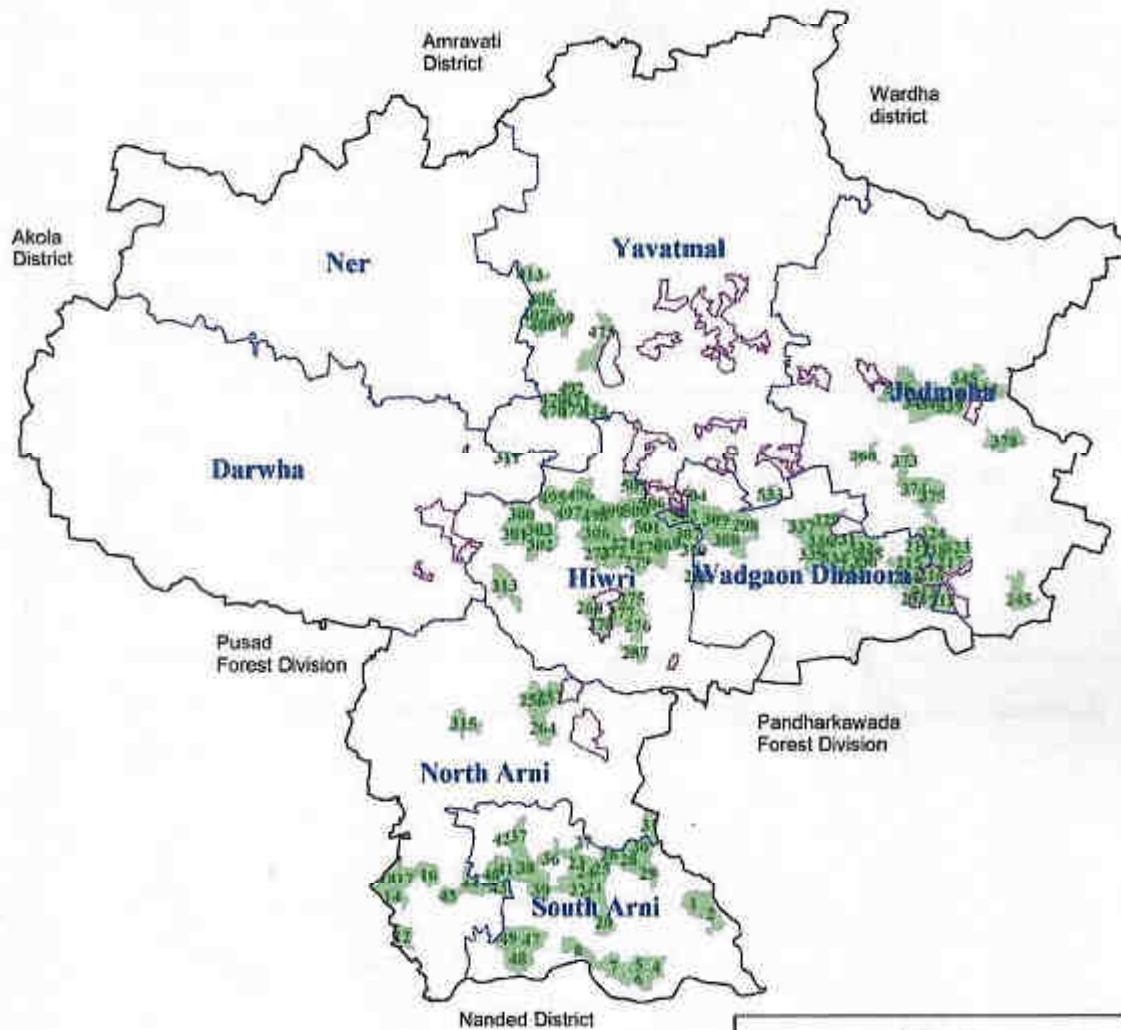
A total of 21 coupes are planned under SCI WC for the year 2022-23, with a cumulative area of 1715.71 ha. The estimated timber to be generated from these coupes, assuming all to be workable, and each coupe is completely D area, is 3538.89 CU.M.

YAVATMAL FOREST DIVISION

Map Showing Selection-cum-Improvement Working Circle



SCALE
1:500000



Legend	
	Yavatmal_Circle_Division
	Labels of Yavatmal_Circle_Range
	Yavatmal_Circle_Range
	Labels of SCI_WC
	SCI_WC

IMPROVEMENT WORKING CIRCLE

Table showing the coupes formed under various working series in Improvement Working Circle Coupe XI (Year 2022-23)

Sr. No.	Range	Felling Series	Compartment No.	Compartment Area	Coupe No.	Coupe Area
1.	North Arni	Shiwar	32	361.97	XI	91.97
2.	South Arni	Karalgaon	40	286.12	XI	70.00
3.	Yavatmal	Masola	532	32.59	XI	32.59
4.	Hiwari	Saikheda	254	357.91	XI	90.00
5.	Darwha	Karegaon	76	205.59	XI	79.24
6.	Ner	Jambhulni	404	241.61	XI	80.00
Total				1485.79		443.8

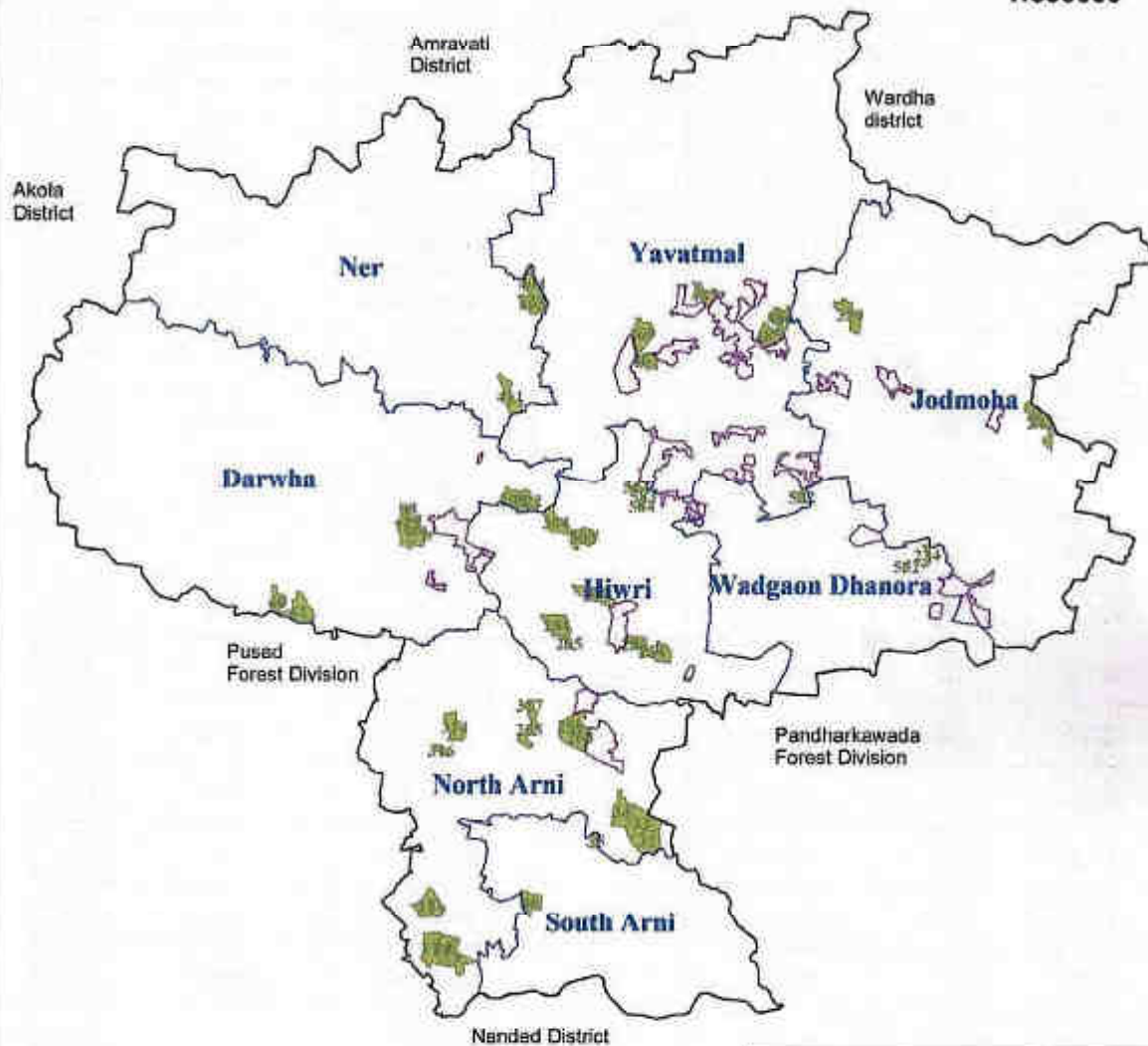
A total of 6 coupes are planned under IWC WC for the year 2022-23, with a cumulative area of 443.8 ha

YAVATMAL FOREST DIVISION

Map Showing Improvement Working Circle



SCALE
1:500000



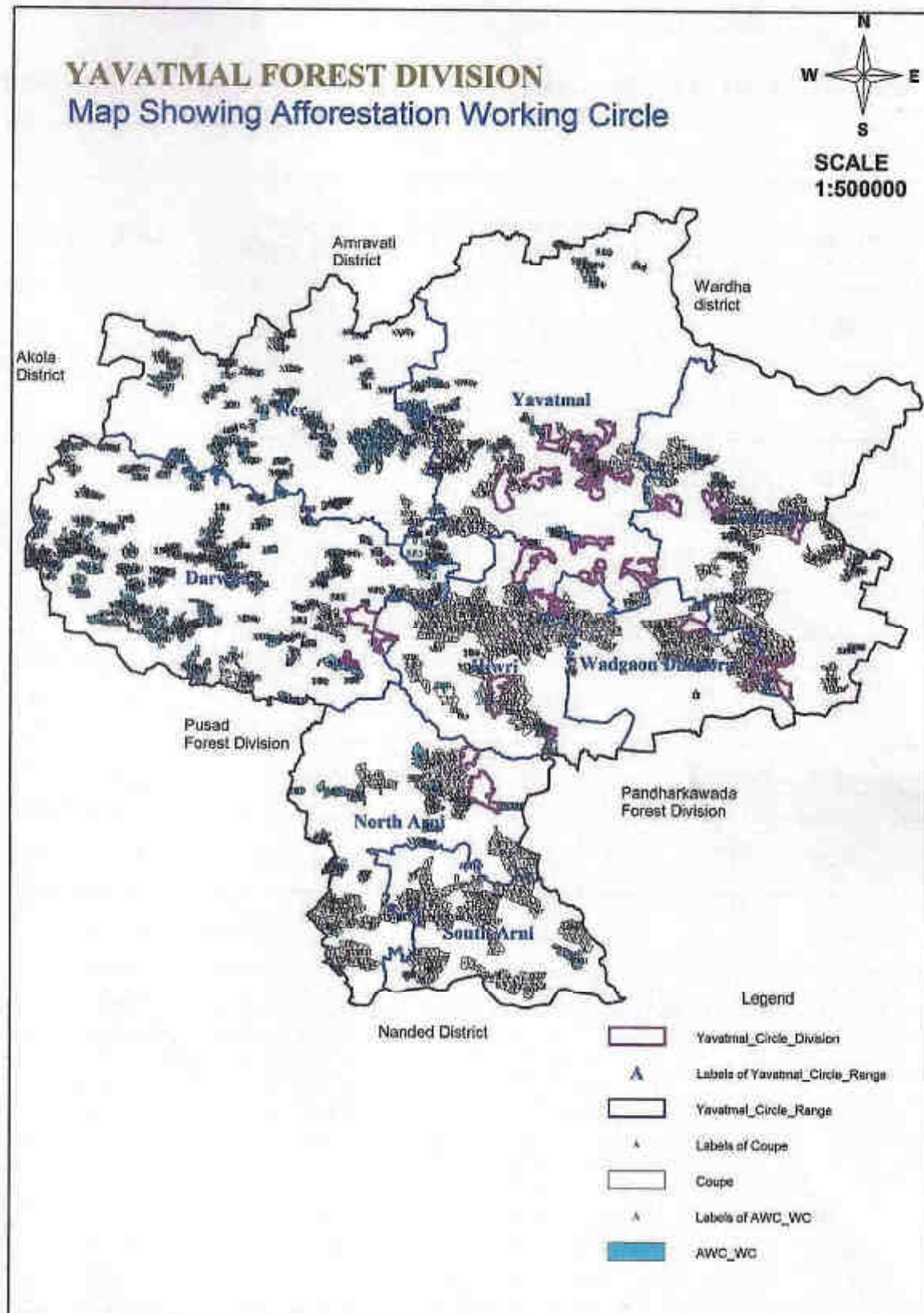
Legend	
	Yavatmal_Circle_Division
	Labels of Yavatmal_Circle_Range
	Yavatmal_Circle_Range
	Labels of IWC_WC
	IWC_WC

AFFORESTATION WORKING CIRCLE

Table showing the coupes formed under various working series in Afforestation Working Circle Coupe XI (Year 2022-23)

Sr. No.	Range	Felling Series	Compartment No.	Compartment Area	Coupe No.	Coupe Area
1.	North Ami	Dolamba	51	88.88	XI	48.88
2.	Darwha	Morzadi	96	147.75	XI	80.00
3.	Darwha	Chandani	321	162.20	XI	80.00
4.	Darwha	Khopdi bk.	530	100.00	XI	75.00
5.	Darwha	Dhamangaon	558	79.11	XI	79.11
6.	Darwha	Ghatkinhi	122	193.5	XI	75.84
7.	Darwha	Banayat	87	269.91	XI	60.00
	Darwha		100	51.06	XI	18.61
8.	Yavatmal	Tiwasa	549	54.43	XI	50.00
	Yavatmal		449	27.76	XI	27.76
9.	Ner	Sirasgaon	420	552.69	XI	92.00
10.	Yavatmal	Asola	392	34.22	XI	34.22
	Yavatmal		569	466.93	XI	66.93
11.	Ner	Gharephal	433	46.70	XI	46.70
12.	Ner	Ner East	422	190.74	XI	60.00
13.	Darwha	Ner West	126	632.59	XI	75.00
				3098.47		970.05

A total of 13 coupes are planned under AWC WC for the year 2022-23, with a cumulative area of 970.05 ha.



FODDER IMPROVEMENT WORKING CIRCLE

Table showing the coupes formed under various working series in Fodder Improvement Working Circle Coupe XI (Year 2022-23)

Sr. No.	Range	Felling Series	Compartment No.	Compartment Area	Coupe No.	Coupe Area
1.	Darwha	Darwha	71	80.13	XI	30.00
	Yavatmal		463	460.94	XI	30.00
2.	North arni	Hiwari	266	189.74	XI	49.74
	North Arni		263	350.83	XI	32.00
3.	Jodmoha	Kalamb	327	466.20	XI	90.20
4.	Jodmoha	Mendhla	356	231.48	XI	51.48
	Jodmoha		377	204.77	XI	24.77
5.	Ner	Ner	198	158.24	XI	60.00
Total				2142.33		368.19

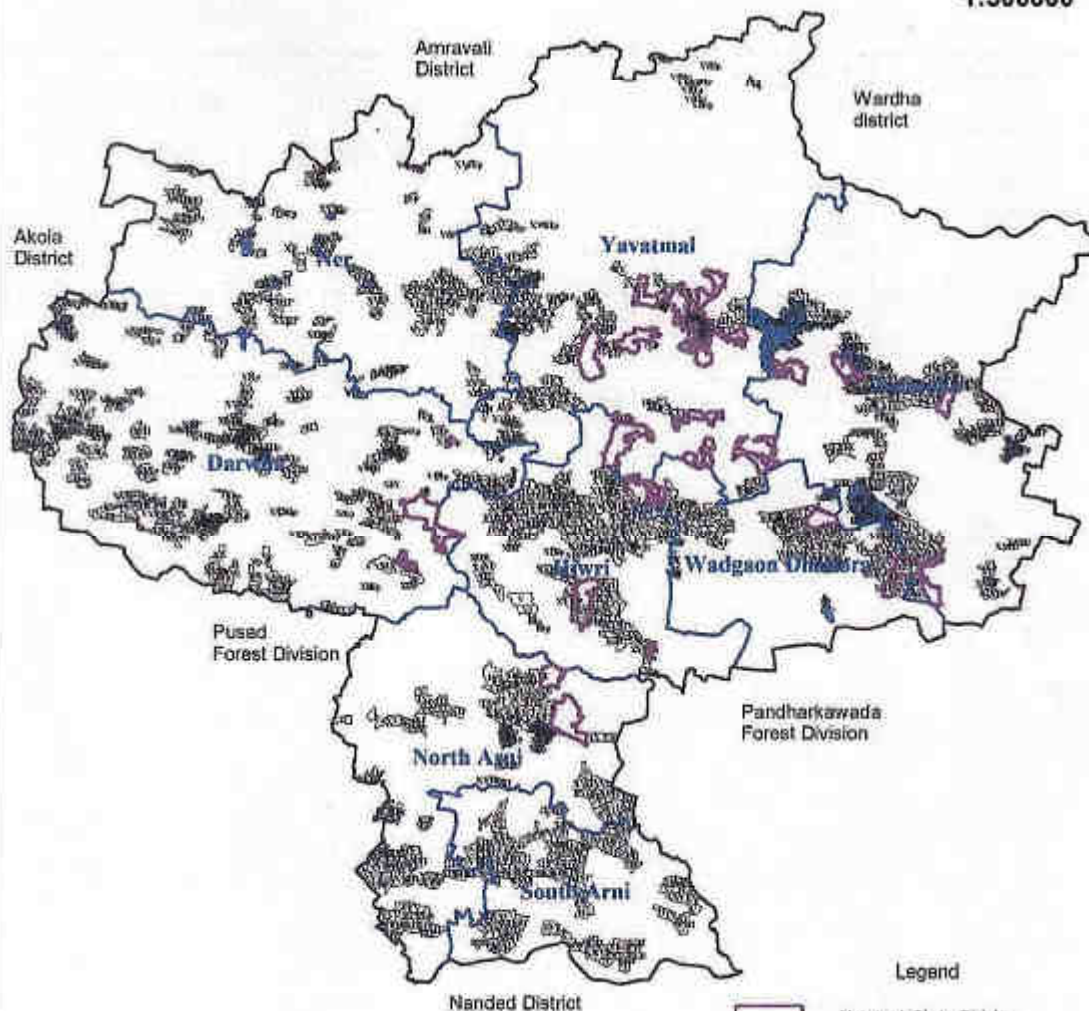
A total of 5 coupes are planned under FIWC WC for the year 2022-23, with a cumulative area of 368.19 ha

YAVATMAL FOREST DIVISION

Map Showing Fodder Improvement Working Circle



SCALE
1:500000



- Legend
- Yavatmal_Circle_Division
 - A Labels of Yavatmal_Circle_Range
 - Yavatmal_Circle_Range
 - x Labels of Coupe
 - Coupe
 - x Labels of FIWC_WC
 - FIWC_WC

CHAPTER – 8

ESTIMATED REVENUE AND EXPENDITURE

Sr. No.	Working Circle	No. of Coupes	Coupe Area (Ha.)	Area to be worked	Expected yield (cu.m.)	Financial Requirement (In Crores)
1.	SCI	21	1715.71	716.86	782.850	0.360
2.	IWC	6	443.80	207.65	97.41	0.093
3.	AWC	16	970.05	290.72	0.00	-
4.	FIWC	8	370.19	274.59	0.00	-
	Total		2159.51	924.51	880.26	0.453

CHAPTER – 9

CONTROL AND RECORDS

The following records will be maintained in the division office.

1. **Control forms** –Control forms will be prepared to include each of working plan prescriptions as well as definite suggestions regarding other operations. All activities of harvesting, subsidiary silvicultural operations, cleaning, thinning, regeneration works, boundary demarcation and soil and moisture conservation works carried out shall be recorded in the control forms. Three permanent sets of these control forms will be prepared. One set each in division office, DCF (Working plan) office and CCF (Territorial) office.
2. **Compartment History**- Compartment history is the record of various activities and observations made in the past year. Compartment history must be maintained by the division office and range office as they keep the record of past management practices and their effects on the growing stock. One copy of the forms will be filled in the divisional compartment history file and another copy will be returned to the RFO. The copies of the compartment history files will be sent to the Working Plan office, Yavatmal annually by the month of August.
3. **Plantation & Nursery registers**- Plantation register will be maintained for all the areas regenerated artificially in the form No. 1 to 9.
4. **Divisional Note Book**-It is desirable for the DCF to maintain certain journals and records for ready reference. These journals are important for controlling and monitoring of various activities of expenditure. A brief note on the plantation will also be recorded by the DCF under the appropriate heads.
5. **Boundary registers** – Register of boundary pillars with GPS reading shall be maintained.
6. **Fire records** -They should be maintained as per the latest orders from State Government from time to time.
7. **Other records**- List of amendments to the working plan and list of area changes will be maintained in prescribed forms



Office of the Principal Chief Conservator of Forests (Hoff)

Maharashtra State, Nagpur

Van Bhawan, Near Police Gymkhana, Ramgiri Road, Civil Lines, Nagpur - 440 001

No.Desk-14/WP/ACF/ 28 / 22-23

Nagpur-440 001, dated 15/09/2022

To

DDGF (Central),
Ministry of Environment & Forests & Climate Change,
Government of India,
New Secretariat Building
Ground Floor, East Wing
Civil lines, Nagpur -440001.

Sub:- Approval of Working Scheme of Yavatmal Forest Division for the Period 2022-23 - Regarding.

- Ref:-
1. Your office letter No.F.No.WP-23/RON/2016-NGP/9704 dt.13/05/2022
 2. Deputy Conservator of Forest (T), Yavatmal letter no desk-survey/ 820/2022-23, dt 13/09/2022

Vide reference at 1, due to expiry of Working Plan of Yavatmal division during 2021-22, IRO has suggested for the submission of Working Scheme for the year 2022-23.

2.0 Accordingly, vide reference at 2, Working Scheme of Yavatmal division has been submitted by Deputy Conservator of Forest (T), Yavatmal for sanction.

3.0 The Felling Proposal for the year 2022-23 has been submitted vide this office letter no.Desk-14/WP/21/2022-23 dated 24/08/2022. In the said proposal, inadvertently, the details of area to be felled in SCI and IWC Working Circles along with the Estimated Yield of Yavatmal division has been already incorporated.

4.0 The PWPR of Yavatmal Forest Division has been received by this office and the same will be placed before the Standing Consultative Committee meeting on 30/09/2022, and subsequently efforts will be made for early completion of DWPR.

5.0 Therefore, in order to have continuity of forestry management, it is kindly requested to approve the Working Scheme of Yavatmal Forest Division for the year 2022-23. Till such time, no felling operations will be carried out in the Yavatmal division.

Encl :- Copy of Working Scheme of Yavatmal Division.

(P. Kalyan Kumar)
Additional Principal Chief Conservator of Forests
(Production and Management)
Maharashtra State



1. Conservator of Forest (T), Yavatmal for information.
2. Conservator of Forest, Working Plan (East) Nagpur for information.
3. Dy Conservator of Forest (T), Yavatmal for information.
4. Dy Conservator of Forest, Working Plan, Yavatmal for information.



भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FORESTS
& CLIMATE CHANGE

Integrated Regional Office
Ground Floor, East Wing
New Secretariat Building
Civil Lines, Nagpur - 440001
apccfcentral-ngp-mef@gov.in

F.No. 12-55/98 (FOR) / 10730

Date: 08.12.2022

✓ To,

The Addl. Principal Chief Conservator of Forests
Production and Management
Maharashtra State
Van, Bhawan, Ramgiri Road, Civil Lines
Nagpur- 440001.

Sub: Approval of Working Scheme for Yavatmal Forest Division for the period 2022-23- regarding,

Sir,

With reference to the above mentioned subject, the undersigned is directed to inform that after examination of Working scheme for Yavatmal Forest Division, the Central Government hereby conveys its approval to the said Working Scheme in accordance with the powers vested under Sub Section (IV) of Section- 2 of Forests (Conservation) Act, 1980 and para 96 of National Working Plan Code 2014 subject to the following conditions:

1. The Period of Working Plan was up to 2021-22. The currency of the Working Scheme shall be for a period of 1 year i.e. for 2022-23.
2. The orders of Hon'ble Supreme Court in the matter of Godavarman Thirumulkpad Vs Union of India in W.P. (Civil) No. 202/95 and related interlocutory applications shall be strictly adhered to. Any prescription or operation at variance with the Hon'ble Supreme Court's order shall be kept in abeyance till the order is in force or otherwise modified.
3. Further, in compliance with order of Hon'ble Supreme Court's dated 22.09.2000, the Government of Maharashtra shall ensure that regeneration of forests commensurates with felling carried out under this Working Scheme.
4. No felling shall be carried out without allocating necessary fund for implementation of regeneration operation so as to make regeneration commensurable with felling. In the events of failure of regeneration or any shortfall in carrying out regeneration operation, no further felling shall be undertaken until the failure/ shortfall is made up.
5. Following the directions issued by MoEF&CC vide letter dated 23.02.2018, Regional Offices of MoEF&CC under the chairmanship of Deputy Director General of Forests (Central) of the Regional Office of this Ministry will be competent authority for deciding the extent of harvesting that could be permitted under approved Working Plans for ensuring regeneration to be commensurable with felling. Instruction/ directions of the Central Government that may be issued in future in this regard shall be strictly complied with. Felling is to be done by State Government only after seeking permission from REC, IRO, MoEF&CC, Nagpur.

6. Fruit bearing naturally grown trees shall not be clear felled for any purpose whatsoever.
7. Standard thinning and silvicultural operations under the strict supervision of Assistant Conservator of Forests and above will be allowed as per norms to improve the health of growing stock while executing the prescriptions of the Working Scheme.
8. Prescriptions of micro plans for JFM (if made) should not deviate from the broad framework/guidelines of the Working Plan and shall be in accordance with various orders of Hon'ble Supreme Court.
9. Felling carried out on forest land after seeking approval of the Central Government under Forest (Conservation) Act, 1980 will not be treated as deviation. However, proposed felling in the forest division shall be restricted proportionately in the current/future years to compensate this removal.
10. No deviations shall be made from the prescriptions of Working Scheme without prior approval of the Central Government under Forest (Conservation) Act, 1980. However, deviations of positive nature i.e. voluntary plantations carried out outside the working area under any project, schemes and compensatory afforestation may be approved by the competent authority of the State Government from time to time.
11. The exploitable girth of tree species and period of felling cycle shall not be lower than the approved in previous Working Plan.
12. In the vicinity of Nalas and water bodies felling shall not be undertaken. Further, felling shall not be undertaken near the known resting/nesting places of wild animals and birds.
13. No commercial felling shall be carried out along the 2 km strip of all perennial Rivers of Maharashtra State as recommended by REC in its meeting dated 24.02.2020 viz; Bhurna, Godavari, Kanhan, Koyna, Krishna, Manjara, Mula, Nira, Panchganga, Pench, Penganga, Pranhita, Purna, Tapi, Vaitarna and Wainganga; further, no commercial felling shall be carried out along the strip of 500 meters of all seasonal Rivers; only eco-restoration shall be carried out.
14. Removal of dead and diseased trees will be undertaken under the supervision of an officer not below the rank of Assistant Conservator of forests.
15. Volume details of all kinds of fellings viz; dead and diseased trees, grants of right and concession and all illicit felling should be compiled along with the estimation of their stand volumes as per the same volume table use for the assessment of growing stock. This report shall be prepared annually working circle and compartment wise by the territorial Sub- DFO and shall be submitted to the CF, Working Plan for this purpose within 02 months of the end of control year. Such removal shall be accounted vis-a-vis prescribed felling yield of the relevant year.
16. To ensure sustainable management of Non Timber Forest Produce (NTFP), scientific assessment of estimated quantity has to be done before their removal as per the prescription of Working Scheme. Proper mechanism has to be in place for the collection of NTFPs in sustainable manner.
17. Status of rare, endangered and near extinct species shall be monitored closely and adequate measures will be taken for their protection and conservation.
18. Execution of Working Scheme shall be in conformity with the National Forest Policies, 1988.

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19. No regularization of existing encroachment should be done without following due procedure. An appendix may be added giving details of the encroachment of the forest area in the division. A definite plan has to be made to remove encroachment and vacated area shall be planted with suitable local species as per Government of India and Hon'ble Supreme Court Orders/Guidelines in the matter.
20. Eco-tourism shall/ may be undertaken on sustainable basis. No permanent structures shall be allowed at such sites. Temporary structures made up of local forest produce may be allowed for public. Such sites will be declared Plastic free zones. These eco-tourisms sites will be managed by the forest department as per the prescriptions of the Working Plan and after taking prior approval of Central Government under Section-2 of Forest (Conservation) Act, 1980.
21. Demarcation and consolidation of Forest Boundaries will be done adequately. Identification of Land Bank in the form of degraded forest areas in the Division to be explored for CA plantations.
22. Gregarious flowering of bamboo, if any, must be reported to ICFRE and other institutes as mandated and the situation be dealt with standard protocol.
23. Proper mechanism has to be put in place to control illegal felling, grazing and fire. Proper fire management plan shall be prepared and executed meticulously.
24. Only 50% of normal yield, if silviculturally available, will be allowed for removal in case of Teak, Dhawada, Bhirra, Lendia, Chichawa, Mowai, Rohan, Shiwan, Shisham, Surya, Karai, Mokha, Palas, Dhaman, Bhilawa, etc. In case of Haldu, Ain, Bija, Tiwas, Kalam, Salai, Garadi, Khair it shall be 20% if silviculturally available.
25. Efforts should be made to undertake artificial regeneration of local species along with 10-15% RET species in such a way that it serves the purpose of biodiversity conservation as well as meeting the demand of fuel wood, fodder and the timber. Planting of exotic species should be avoided.
26. Lac cultivation, if any, will be practiced as per the provisions of Forest (Conservation) Act, 1980.
27. Documents and appendices mandated in National Working Plan Code, 2014 will be incorporated in the Working Scheme.
28. Attempts shall be made to grow trees outside forest areas to meet the local demand of small timber, fuel wood and fodder as well as to achieve the 33% forest cover as envisaged in National Forest Policy, 1988.
29. Cutback operation shall be undertaken as per standard norms and grassland will not be expanded at the expense of natural tree cover.
30. While managing forests, provisions of the Biological Diversity Act, 2002 and Wildlife Protection Act, 1972 shall be fully complied.
31. Prescriptions on Wildlife Management should be vatted by the CWLW and a certificate of the same be attached to the scheme.
32. Grazing to be properly regulated and grazing fee should be levied.
33. Annual Plan of Operations under Compensatory Afforestation Fund Act, 2016 and Compensatory Afforestation Fund Rules, 2018 shall be in conformity with Working Scheme prescriptions.

34. All the Unclassed Forest, acquired CA areas and acquired Private Forests should be notified as RF/ PF in time-bound manner at the earliest.

35. The Central Government reserves the right to review, modify, withdraw this approval at any time if any of the conditions of approval are not implemented. Relevant modification in the Working Scheme are required to be carried out so as to keep it in conformity with the orders, circulars and guidelines issued by the Central Government or the Apex Court under Forest (Conservation) Act, 1980 or any other statute and National Forest Policy from time to time.

This issues with the approval of DDGF (C)/ Regional Officer (Central), Integrated Regional Office, MoEF & CC, Nagpur

Yours faithfully,

(C.B. Tashildar)
AIGF (Central)

Copy to:-

1. The Additional Director General of Forest (FC) Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Jor Bagh, New Delhi - 110003.
2. The Principal Chief Conservator of Forests (HoFF), Government of Maharashtra, Van Bhawan, Ramgiri Road, Civil Lines, Nagpur - 440001.
3. Guard file.

(C.B. Tashildar)
AIGF (Central)

महत्वाचे.

क्रमांक :- उवसं(य)/कक्ष-९/जंकास/ 1221 /2022-23

यवतमाळ 445001 दिनांक 13 /12 /2022

प्रति,

1. यवतमाळ जिल्हा जंगल कामगार सहकारी संस्थेचा संघ, मर्या. यवतमाळ शास्त्री नगर, दाते कॉलेजच्या मागे, यवतमाळ
2. अमरावती, अकोला व बुलढाणा जिल्हा जंगल कामगार सहकारी संस्थेचा संघ मर्या. अकोला वातुरकर लेआऊट श्री.गोविंद पवार (इंजिनियर) यांचे घरी शालीनी टायपिंग इस्टीट्यूट जवळ, खदान, अकोला

विषय :- जंगल कामगार सहकारी संस्थाना सन 2022-23 या वर्षाकरीता वाटप करावयाच्या कुपाचा जाहीरनामा.....

संदर्भ :- पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय यांचे पत्र क्र.12-55/98 (FOR) /10730
दिनांक- 08/12/2022

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यवतमाळ वनविभागातील संदर्भाय पत्रान्वये मंजूर कार्यआयोजने प्रमाणे जंगल कामगार सहकारी संस्थांना सन 2022-23 या वर्षाकरीता वाटप करावयाच्या एस.सी.आय.- 21, आय.डब्ल्यू.सी.- 06, ए.डब्ल्यू.सी.- 16 व एफ.आय.डब्ल्यू.सी.- 08 अशी एकुण 51 कुपे उपलब्ध आहे. त्यापैकी सद्यास्थीत एस.सी.आय. च्या एकुण 17, आय.डब्ल्यू.सी.च्या- 04, ए.डब्ल्यू.सी.च्या- 0 व एफ.आय.डब्ल्यू.सी. ची 0 हि कुपे कामास योग्य आहेत म्हणजेच एकुण 21 कुपे संस्थेस वाटपाकरीता उपलब्ध आहेत.

या कार्यालयास कुप मागणी अर्ज सादर करण्यापुर्वी कृपया संबंधित संस्थेकडून खालील अटी पूर्ण झाल्याची खात्री करुन घेण्यांत यावी.

1. प्रत्येक संस्थेनी संचालक मंडळाच्या सभेत कुप मागणी अर्ज सादर करण्याकरीता ठराव घेण्यापुर्वी संबंधीत वनक्षेत्र अधिकारी (ज्यांचे कार्यक्षेत्रात कुपे आहेत) यांना सभेस उपस्थित राहण्याबाबत पूर्व सूचना देणे आवश्यक आहे. शासन निर्णय क्रमांक/एफएलसी/ 2264/II/वाय दिनांक 3/11/1965 अन्वये संबंधीत वनपरिक्षेत्र अधिकारी हे संस्थेच्या कार्यकारणी समितीच्या सभेस वनविभागाचे प्रतिनिधी म्हणुन उपस्थित राहतील.
2. संस्थेनी त्यांच्या कार्यक्षेत्रातील कुपे वाटपाकरीता योग्य असल्याची प्रथम खात्री करुन घेणे आवश्यक आहे. जाहीरनाम्या बाहेरील किंवा चुकीची कुपे मागणी अर्जात नमुद होणार नाही याची खात्री करुन घ्यावी.
3. संस्थेनी कुप मागणी अर्ज संस्थेच्या संचालक मंडळाच्या ठरावाप्रमाणे व दिलेल्या अधिकाराप्रमाणे संबंधीत पदाधिकाऱ्यांच्या सहीनिशी ठरावाच्या प्रतीसह तिन प्रतित, परिपूर्ण सादर करणे आवश्यक आहे.
4. कुप मागणी अर्जासह सभासदांची अध्यक्षांकडून स्वाक्षांकित केलेली यादी, सभासदांच्या ओळखपत्रासह तिन प्रतित सादर करणे आवश्यक आहे. अन्यथा संस्थेच्या सभासदांना कुपात प्रवेश करू दिल्या जाणार नाही.

तसेच कुप मागणी अर्जात कुप कामावर प्रत्यक्ष हजर राहणाऱ्या सभासदांची संख्या आदिवासी/गैरआदिवासी दर्शविणे आवश्यक आहे.

5. कुप मागणी अर्जा बरोबरच जिल्हा उपनिबंधक यांचे कडील शिफारस सुध्दा आवश्यक असल्याने संस्थेचे अर्ज त्यांचे मार्फतच या कार्यालयास प्राप्त होईल अशा रितीने स्विकारून आपले शिफारसीसह या कार्यालयास सादर करणे आवश्यक आहे.
6. संस्थांना गौण वनउपज (काष्ठेत्तर वनउत्पादन) मागणी करावयाची असल्यास, मागणी अर्ज शासन ठराव क्रमांक 1070/232782 दिनांक 25/11/1974 अन्वये विहीत प्रपत्रात कुप मागणी अर्जासोबत सादर करावे.
7. कुप मागणी अर्जाचा विचार हा शासन निर्णया प्रमाणे ठरवून दिलेल्या निती नियमांतर्गत होत असल्याने जी संस्था कुप वाटपास पात्र ठरणार नाही अशा संस्थेला मागणी केलेल्या कुपाचा स्वखुशीने राजीनामा देऊन, मागणी अर्ज मागे घ्यावा लागेल. संस्थेनी तसे न केल्यास मागणी केलेल्या कुपाबाबतचा योग्य निर्णय घेण्याचा अधिकार वन विभागास राहील. सदर बाबतीत संस्थेचा कोणताही आक्षेप राहणार नाही.
8. वाटप झालेल्या कुपांची कामे विहीत मुदतीत होणे अत्यंत आवश्यक असल्यामुळे जिल्हा संघाने प्रत्येक संस्थेची कार्यक्षमता, मागील वर्षाचे कामाचा आढावा, वेळेचे नियोजन इत्यादी बाबी विचारात घेऊनच संस्थेस कुपांची शिफारस करावी.
9. संस्थेनी कुप मागणी अर्जा सोबत 10 टक्के कल्याणकारी अधिदान वाटपाचे प्रमाणपत्र, वस्तु व सेवा कर निरंक असल्याबाबतचे कर अधिकारी यांचे अद्यावत प्रमाणपत्र, व्यवसायकर भरणा केल्याबाबत व्यवसायकर अधिकारी यांचे प्रमाणपत्र, ऑडीट फ्री भरणा केल्या बाबत लेखा परिक्षक यांचे प्रमाणपत्र तसेच इतर वन विभागाची थकबाकी नसल्या बाबतचे नाहरकत पत्र जोडणे आवश्यक आहे. त्याशिवाय कुप मागणीचे प्रस्ताव मा. मुख्य वनसंरक्षक (प्रादेशिक) यवतमाळ यांना सादर केल्या जाणार नाही.
10. संस्थेनी कुप मागणी अर्जासोबत वनीकरणाचे हमीपत्र जोडणे आवश्यक आहे.
11. उपलब्ध कुपांची यादी जरी प्रसिद्ध करण्यात आलेली असली तरी प्रत्यक्ष कुप काम हे केंद्र सरकारच्या कोअर ग्रुप च्या मान्यतेवर अवलंबून राहील याची कृपया नोंद घ्यावी.
12. जंकास संस्थेस यापूर्वी वाटप झालेल्या कुपांचे प्राथमिक हिशोब उपवनसंरक्षक, यवतमाळ वनविभाग, यवतमाळ या कार्यालयास सादर केलेले आहेत याची खात्री करण्यात यावी व उर्वरित कुपांचे प्राथमिक हिशोब तात्काळ सादर करण्यात यावेत. संस्थेकडे प्राथमिक हिशोब प्रलंबीत असल्यास, त्यांना कुप वाटप केले जाणार नाही.

सहपत्र:- कुपांची यादी

(अर्जदरेंडा येल्तु, भावसे)
उपवनसंरक्षक,

यवतमाळ वनविभाग यवतमाळ

प्रतिलिपी :- मा.प्रधान मुख्य वनसंरक्षक (उत्पादन व व्यवस्थापन) म.रा.नागपुर यांना कुपाचे जाहिरनामा प्रतिसह माहितीस्तव सविनय सादर.

प्रतिलिपी :- मा. वनसंरक्षक (प्रादेशिक) यवतमाळ यांना कुपाचे जाहिरनामा प्रतिसह माहितीस्तव सविनय सादर.

प्रतिलिपी :- उपवनसंरक्षक पाढरकवडा/पुसद/वाशिम वनविभाग यांना कुपाचे जाहिरनामा प्रतिसह माहिती तथा उचित कार्यवाहीस्तव सस्नेह अग्रेषित.

प्रतिलिपी :- सहा. वनसंरक्षक (जं.का.स.व कॅम्पा)/(रो.ह.यो.व वन्यजीव)/(जंकास व कोनझरी)/उपविभागीय वन अधिकारी, दारव्हा यांना माहिती करीता अग्रेषित सहपत्र:- कुपांची यादी

प्रतिलिपी :- वनक्षेत्र अधिकारी,यवतमाळ/हिवरी/उ.आर्णी/द.आर्णी/जोडमोहा/वडगांव/दारव्हा/नेर यांना माहिती करीता रवाना.संस्थांना वाटपाकरीता प्रसिध्द झालेल्या जाहिरनाम्यातील कुपांची कामे विभागीयरित्या करण्यांत येणार नाही याची त्यांनी दक्षता घ्यावी. तसेच त्यांच्या कार्यक्षेत्रातील संस्थेच्या कार्यकारणी समितीच्या होणाऱ्या सभेस वनविभागाचे प्रतिनीधी म्हणून उपस्थित रहावे. सहपत्र:- कुपांची यादी.

प्रतिलिपी :- वखार अधिकारी,जोडमोहा यांना माहितीस रवाना.

प्रतिलिपी :- अध्यक्ष/सचिव,जिल्हा जंगल कामगार सहकारी संस्था मर्या. लोणी (घटाणा)/हिवरी/ रामपुर/ भानसरा/ उमरगांव(पोड)/वडनेर/वटबोरी/ घोडखिंडी/ वंसतपूर(खर्डा)/ दिग्रस/ चिखली/ हनवतखेडा/ बेलगव्हाण/ कासमार/ झंरडी/अंधारसांवगी/ निंबी (दहाजे)/शिल्ला(नेमाणे) यांना माहिती व उचित कार्यवाहीस्तव अग्रेषित. सन 2022-23 या वर्षातील वाटपाकरीता उपलब्ध कुपांची स्वतः पाहणी करावी. तसेच कुप मागणी अर्ज सहा. निबंधक/जिल्हा उपनिबंधक सहकारी संस्था, यवतमाळ यांचे शिफारसीसह, जिल्हा जंगल कामगार सहकारी संस्थांचे संघामार्फत आवश्यक त्या संपूर्ण कागदपत्रांसह या कार्यालयास त्वरित सादर करावे.

मार्फत - वखार अधिकारी जोडमोहा

सहपत्र :- कुपांची यादी.

प्रतिलिपी :- योजनेत्तर शाखा/विक्री शाखा विभागीय कार्यालय यवतमाळ यांना माहिती करीता रवाना.

प्रतिलिपी :- सुचना फलक, विभागीय कार्यालय यवतमाळ .

सन 2022-23 या वर्षाकरिता कार्यवाहीकरून नुसार कुपाचा जाहीरनामा प्रसिद्ध करणे बाबत

अ. क्र.	पनक्षेत्र	पतव्याचे नाव	वकाफ संकेत	कुप क्रमांक	कुपाचे नाव	काष्ठ क्रमांक	कुपाचे एकूण क्षेत्र हेक्टर.	कामास योग्य क्षेत्र हेक्टर (हो क्षेत्र)	कुप कामास योग्य क्षेत्राची विवा अवधी 7	लोट करतल्याचा साडीची एकूण संख्या	अवधीपयचा नुसार अपेक्षित इतरांचा व छिन्नाबाधनाचा तपशिल					संय
											सांग इमारत (च.मो.)	नवीन विट	अंदाजित किंमत (रुपये)	निष्ठासनाचा खर्च	निव्वट अवधी (रुपये)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	उ.आणी	गण्डा	ए.डब्ल्यू.सी.	XI	चाणो	321	80.00	---	अयोग्य	---	---	---	---	---	0	
2	उ.आणी	हिवळेखर	ए.डब्ल्यू.सी.	XI	खोडवा	51	48.88	---	अयोग्य	---	---	---	---	---	0	
3	दारका	दारका	ए.डब्ल्यू.सी.	XI	धामणगाव	558	79.11	---	अयोग्य	---	---	---	---	---	0	
4	दारका	दारका	ए.डब्ल्यू.सी.	XI	नेर पश्चिम	126	75.00	---	अयोग्य	---	---	---	---	---	0	
5	दारका	दारका	ए.डब्ल्यू.सी.	XI	गाटकिरी	122	75.44	---	अयोग्य	---	---	---	---	---	0	
6	दारका	दारका	ए.डब्ल्यू.सी.	XI	खोपडोडु	530	75.00	---	अयोग्य	---	---	---	---	---	0	
7	दारका	पण्ड	ए.डब्ल्यू.सी.	XI	पुलखो	96	80.00	---	अयोग्य	---	---	---	---	---	0	
8	दारका	पण्ड	ए.डब्ल्यू.सी.	XI	चाणल	87	60.00	---	अयोग्य	---	---	---	---	---	0	
9	दारका	गण्ड	ए.डब्ल्यू.सी.	XI	बाणल	100	18.61	---	अयोग्य	---	---	---	---	---	0	
10	दारका	लोही	ए.डब्ल्यू.सी.	XI	तिवस	449	27.76	---	अयोग्य	---	---	---	---	---	0	
11	नेर	नेर	ए.डब्ल्यू.सी.	XI	नेर पूर्व	422	60.00	---	अयोग्य	---	---	---	---	---	0	
12	नेर	मालखेड	ए.डब्ल्यू.सी.	XI	मालखेड	420	92.00	---	अयोग्य	---	---	---	---	---	0	
13	नेर	मोहर	ए.डब्ल्यू.सी.	XI	घारेफळ	433	46.70	---	अयोग्य	---	---	---	---	---	0	
14	नेर	सोमवास	ए.डब्ल्यू.सी.	XI	तिवस	549	50.00	---	अयोग्य	---	---	---	---	---	0	
15	यवतमाळ	करतगाव	ए.डब्ल्यू.सी.	XI	जासोरा	392	34.22	---	अयोग्य	---	---	---	---	---	0	
16	यवतमाळ	बाणपुर	ए.डब्ल्यू.सी.	XI	आमोला	569	66.93	---	अयोग्य	---	---	---	---	---	0	
एकूण											0.00	0.00	0.00	0.00	0.00	0.00
त्रागस्थान प्रगत की अवस्थेस प्रमाणित आलेल तारीख कुप तालीम करीत आहे .																

यवतमाळ वन विभाग यवतमाळ

सन 2022-23 या वर्षाकरीता कार्यआयोजन नुसार कुपाचा जाहीरनामा प्रसिध्द करणे बाबत

अ. क्र.	वनक्षेत्र	जुलुजाचे नांव	चक्रांग संकेत	कुपा क्रमांक	बुऱ्याचे नांव/ पातनश्रेणी	कक्ष क्रमांक	कुपाचे एकुण क्षेत्र हेक्टर.	कामास योग्य क्षेत्र हेक्टर (डी क्षेत्र)	कुपा कामास योग्य किंवा अयोग्य ?	तोड करवावाच्या झाडांची एकुण संख्या	अंदाजपत्रका नुसार अर्थीत उत्पादन व उत्पादनातचा तपशिल					संग्र.
											सांग इयात (घ.मी.)	जलतन सिटा	अंदाजित किंमत (रुपये)	निकासनाचा खर्च	निव्वळ उत्पन्न (रुपये)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	ठ.आणी	बोरगांव	एफ.आय.डब्ल्यू.सी.	XI	हिबरो	265	49.74	---	अयोग्य	---	---	---	---	---	0	---
2	ठ.आणी	बोरगांव	एफ.आय.डब्ल्यू.सी.	XI	हिबरो	263	32.00	---	अयोग्य	---	---	---	---	---	0	---
3	बोडमोहा	कळेंव	एफ.आय.डब्ल्यू.सी.	XI	मॅडला	356	51.48	---	अयोग्य	---	---	---	---	---	0	---
4	बोडमोहा	कोडमोहा	एफ.आय.डब्ल्यू.सी.	XI	काळंब	327	92.20	---	अयोग्य	---	---	---	---	---	0	---
5	बोडमोहा	मेटीखेडा	एफ.आय.डब्ल्यू.सी.	XI	मॅडला	377	24.77	---	अयोग्य	---	---	---	---	---	0	---
6	बारका	पावडा	एफ.आय.डब्ल्यू.सी.	XI	बारका	71	30.00	---	अयोग्य	---	---	---	---	---	0	---
7	नेर	मोडर	एफ.आय.डब्ल्यू.सी.	XI	नेर	198	60.00	---	अयोग्य	---	---	---	---	---	0	---
8	यवतमाळ	जोड	एफ.आय.डब्ल्यू.सी.	XI	बारका	403	30.00	---	अयोग्य	---	---	---	---	---	0	---
एकूण							370.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0

एफ.आय.डब्ल्यू.सी. गोपवारा

एकूण उपलब्ध कुपा संख्या	कुपा कानास योग्य कुपा संख्या	कामास अयोग्य कुपा संख्या
8	0	8

उपविकासक

यवतमाळ वन विभाग यवतमाळ

एकत्रीत गोषवारा

अ.क्र.	कार्यवृत्त	एकुण कुपे	योग्य कुपे	अयोग्य कुपे
1	एस.सी.आय.	21	17	4
2	आय.डब्लु.सी.	6	4	2
3	ए.डब्लु.सी.	16	0	16
4	एफ.आय.डब्लु.सी	8	0	8
एकुण		51	21	30


 उपवनसंरक्षक
 चवतमाळ वन विभाग चवतमाळ



प्रधान मुख्य वनसंरक्षक (वन बल प्रमुख) महाराष्ट्र राज्य, नागपूर यांचे कार्यालय.
(अपर प्रधान मुख्य वनसंरक्षक (उत्पादन व व्यवस्थापन) महाराष्ट्र राज्य, नागपूर)
"वनभवन" रामगिरी रोड, पोलिस जमखाना जवळ, सिविल लाईस, नागपूर-440 001
दूरध्वनी क्र. (0712) 2556788 ई-मेल pccpmrpp@mahaforest.gov.in

क्रमांक- कक्ष-14/अप्रमुवसं(उ.व.व.)/ आर.एस./ 86/22-23.

दिनांक- 15/12/2022.

विषय:- यवतमाळ वनविभागाची सन २०२२-२३ या वर्षाची Working Scheme मंजुरीबाबत.

संदर्भ:- केंद्रशासनाचे पर्यावरण, वन व जलवायु परिवर्तन मंत्रालय, क्षेत्रीय कार्यालय, नागपूर यांचेकडील पत्र क्रमांक F.No. WP-12-55/98-NGP/10730, दिनांक 08/12/2022.

वनसंरक्षक (प्रादेशिक) यवतमाळ यांचे लक्ष संदर्भात पत्राकडे वेधण्यांत येत आहे. त्यांना कळविण्यांत येते की, केंद्रशासनाचे पर्यावरण, वन व जलवायु परिवर्तन मंत्रालय, क्षेत्रीय कार्यालय, नागपूर यांनी संदर्भात पत्राबब सन २०२२-२३ करिता यवतमाळ वनविभागाची Working Scheme नमुद अट क्र. १ ते ३५ नुसार अधिन राहून मान्यता दिलेली आहे.

केंद्र शासनाचे पत्रात नमुद अट क्र. ५ अन्वये वृक्षतोडीस केंद्रशासनाने परवानगी दिल्यानंतरच कामे करण्यांत यावीत याबाबत स्पष्ट निर्देश दिलेले आहेत. त्या अनुषंगाने अटीचे तंतोतंत पालन करण्यांत यावे.

सुलभ संदर्भाकरिता प्रत ई-मेल द्वारे माहिती व उचित कार्यवाहीसाठी पाठविण्यांत येत आहे.

सहपत्र- वरिलप्रमाणे

(पी. कल्याण कुमार)
15/12/2022

अपर प्रधान मुख्य वनसंरक्षक (उत्पादन व व्यवस्थापन)
महाराष्ट्र राज्य

प्रति,

वनसंरक्षक (प्रादेशिक), यवतमाळ.

प्रतिलिपी :- प्रधान मुख्य वनसंरक्षक (वन बल प्रमुख), महाराष्ट्र राज्य यांना सहपत्रासह माहितीस सादर.

प्रतिलिपी :- प्रधान मुख्य वनसंरक्षक (अ.नि. व वि.), महाराष्ट्र राज्य यांना सहपत्रासह माहितीस सादर.

प्रतिलिपी :- वनसंरक्षक कार्यआयोजना (पूर्व) नागपूर यांना सहपत्रासह माहिती व उचित कार्यवाहीस.

प्रतिलिपी :- उपवनसंरक्षक (कार्य आयोजना) विभाग यवतमाळ यांना सहपत्रासह माहिती व उचित कार्यवाहीस.

प्रतिलिपी :- उपवनसंरक्षक (प्रा.) यवतमाळ यांना सहपत्रासह माहिती व उचित कार्यवाहीस. त्यांनी अटीचे काटेकोरपणे पालन करून केंद्र शासनाच्या मंजुरीनंतरच वृक्षतोडीची व इतर कामे करावीत.



भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FORESTS
& CLIMATE CHANGE

Integrated Regional Office
Ground Floor, East Wing
New Secretariat Building
Civil Lines, Nagpur - 440001
apccfcentral-ngp-mef@gov.in

F.No. WP-42/ROH/2017-NGP /11071

Date: 31.01.2023

✓ To,

The Principal Secretary (Forests),
Revenue and Forest Department,
Hutatma Rajguru Chowk
Madam Cama Marg
Mantralaya, Mumbai - 400032.

Sub: Proposal for Implementation of Working Plan prescriptions - felling permission for the year 2022-23 in the State of Maharashtra- regarding.

Sir,

The undersigned is directed to refer to APCCF (Production and Management), Government of Maharashtra letter No Desk-14/WP/ACF/106/22-23 dated 05.01.2023 on the above subject seeking prior approval of the Central Government and to say that the said proposal has been examined and recommended by the Regional Empowered Committee constituted under Section - 4 of the Forest (Conservation) Act, 1980 in its meeting dated 17.01.2023.

After detailed examination and discussion on the proposal of APCCF (Production and Management), State Government, Maharashtra, the Committee decided to recommend the supplementary felling proposal subject to fulfillment of general and standard conditions as per following details:

Sr. No.	Division	Working Circle	Area to be worked (ha.)	Expected Yield (CuM)	Financial Requirement (Crore)
1.	Yavatmal	SCI	716.86 ✓	782.85	0.36
		IWC	207.65	97.41	0.09
2.	Wadsa	SCI	845.78	1992.65	0.25
		IWC	585.37	361.11	0.18
3.	Allapalli	CWC	50.72	1731.47	0.43
Total:-			2406.38	4965.49	1.31

The approval is subject to following conditions:

- The budget of Rs. 1.31 Crores as made available by the State Govt. for this purpose in the current financial year for carrying out different operations shall be ensured for full achievements of targets especially regeneration. No CAMPA funds shall be utilized for any such regeneration;
- Fund allotment for regeneration work should be enhanced to the extent estimated by Working Plan Officers. In case no estimate is available in the Working Plan, the fund should be allotted on the basis of the site specific plan for regeneration;

- iii. Efforts shall be made to involve people's participation through JFMC's in all forestry works;
- iv. If no regeneration can be carried out in an area, due to law and order or any other reason, then no felling should be carried out in an equivalent area;
- v. There shall be no clear felling and plantations be taken up in areas with crown density 0.4 and above;
- vi. Appropriate and effective measures should be undertaken for the conservation of biodiversity by protecting local RET species of area and wildlife management by protecting and maintaining all meadows and fruit bearing trees;
- vii. The orders of Hon'ble Supreme Court in the matter of Godavarman Thirumulkpad Vs Union of India in W.P. (Civil) No. 202/95 and related interlocutory applications shall be strictly adhered to. Any prescription or operation at variance with the Hon'ble Supreme Court's order shall be kept in abeyance till the order is in force or otherwise modified;
- viii. Further, in compliance with the order of the Hon'ble Supreme Court dated 22.09.2000, the Government of Maharashtra shall ensure that regeneration of forest is commensurate with the felling carried out;
- ix. The State Government shall follow the principle of sustainable management and precautionary principle as proponent by the Hon'ble Supreme Court and the Hon'ble NGT in various pronouncements;
- x. A comprehensive analysis of estimated yield and actual yield should be undertaken. The reasons for shortfall/excess yield should be analysed and measures taken to minimize the difference;
- xi. The State Government should carry out exercise for preparation of the latest local volume tables of all major species to be felled in all regions to get realistic estimation of the yield;
- xii. Reconstruction of boundary pillars may be done so as to complete the works in selected coupes taken up in a year rather than scattering it in the whole State;
- xiii. No commercial felling shall be carried out along the 2 km strip of all perennial Rivers of State; further, no commercial felling shall be carried out along the strip of 500 meters of all seasonal Rivers; only eco-restoration work shall be carried out;
- xiv. No commercial felling shall be carried out in the Divisions where working plan is not in operation;
- xv. No deviations shall be made from the prescriptions of Working Plan without prior approval of the Central Government under Forest (Conservation) Act, 1980. However, deviations of positive nature i.e. voluntary plantations carried out outside the working area under any project, schemes and compensatory afforestation may be approved by the competent authority of the State Government from time to time;
- xvi. Fruit bearing naturally grown trees shall not be cleared felled;
- xvii. Silvicultural operations including thinning shall be done under direct supervision of an officer not below the rank of Assistant Conservator of Forests;
- xviii. Efforts should be made to undertake artificial regeneration of local species as well as RET species in such a way that it serves the purpose of biodiversity

- conservation as well as meeting the demand of fuel wood, fodder and the timber. Planting of exotic species should be avoided;
- xix. All kinds of felling including dead, dying, diseased trees, for granting of right and concession, illicit felling and felling mandated under FCA approval shall be accounted for against the prescribed felling yield of the relevant year;
- xx. Demarcation and consolidation of forests shall be done adequately in time bound manner;
- xxi. The Central Government reserves the right to review/modify/withdraw, this approval at any time if any condition of this approval is not implemented. Relevant modifications in the annual plan are required to be carried out so as to keep it in conformity with the orders, circulars and guidelines issued by the Central Government or the Apex Court under Forest (Conservation) Act, 1980 or any other statute and National Forest Policy from time to time.

This issues with the approval of DDGF (C)/ Regional Officer (Central), Integrated Regional Office, MoEF & CC, Nagpur.

Yours faithfully,


(C.B. Tashildar)
AIGF (Central)

Copy to:

- i. The IGF (RoHQ), Ministry of Environment, Forest and Climate Change, Indira Paryavaran Bhawan, Jorbagh Road, Aliganj, New Delhi- 110003.
- ii. The Addl. Principal Chief Conservator of Forests, Production and Management, Van Bhawan, Ramgiri Road, Civil Lines, Nagpur, Maharashtra- 440001.
- iii. O/o Principal Chief Conservator of Forests (HoFF) Govt. of Maharashtra, Van Bhawan, Ramgiri Road, Civil Lines, Nagpur-440001.
- iv. Guard file.


(C.B. Tashildar)
AIGF (Central)

17.2 Submission of Draft Working Plan and SLC Meeting Letter and other documents.



महाराष्ट्र शासन
वनविभाग

उप वनसंरक्षक, कार्य आयोजना, यवतमाळ यांचे कार्यालय
"वगभवन", पहिला माळा, अप्सरा टॉकीज रोड, चर्चचे समोर, यवतमाळ - ४४५००९ (म.रा.)
दूरध्वनी क्रमांक: ०७२३२-२४४२८९, ईमेल: cfwp_yavatmal@mahaforest.gov.in,
cfwp_yvt@gmail.com

जा.क्र.:उवसं/काआ/कक्ष-५(सर्व्हे)/प्र.क्र. /235/२०२३-२४ यवतमाळ. दिनांक- 14 / 8 / २०२३.

प्रति,

मा. वनसंरक्षक
कार्य आयोजना (पुर्व),
नागपूर

विषय :- यवतमाळ वनविभागाचा DWPR मंजुरीसाठी सादर करणेबाबत.

संदर्भ: १) वनसंरक्षक, कार्य आयोजना-पुर्व, नागपूर यांचे कार्यालयील पत्र क्र/जीआयएस/काआ/१३८/
दिनांक १०.०७.२०२३

यवतमाळ वनविभागाची कार्य आयोजना कालावधी सन २०१२-१३ ते २०२१-२२ असून सदर कार्य आयोजना संपुष्टात आलेली आहे. उपरोक्त संदर्भीय पत्राचे अनुषंगाने नविन कार्य आयोजना सन २०२३-२४ ते २०३२-३३ करिता यवतमाळ वनविभागाचा DWPR दिनांक १५.०८.२०२३ पर्यंत सादर करण्याचे कळविले आहे.

त्या अनुषंगाने यवतमाळ वनविभागाचा DWPR तयार करुन स्थायी सल्लागार समिती सभेत मंजुरीसाठी Volume-I व Volume- II दोन प्रतीत सादर करण्यात येत आहे.

सहपत्र :- DWPR

Volume-I व II

दोन प्रतीत

(आनंद रेड्डी येल्कु, भा.व.से.),
उपवनसंरक्षक,
कार्य आयोजना, यवतमाळ.

✓ प्रतिलिपी: मा. अपर प्रधान मुख्य वनसंरक्षक (उत्पादन व व्यवस्थापन), म.रा. नागपूर यांना माहितीस सविनय सादर.



Government of Maharashtra

Office of the Principal Chief Conservator of Forests (Head of Forest Force),
Maharashtra State, 'Van Bhavan', Ramgiri Marg, Civil Lines, Nagpur-440 001.
Ph.No. 0712-2556788 Web site : mahaforest.nic.in E-mail : pccfpmngp@mahaforest.gov.in

No.Desk-14/WP/ACF/ 81/23-24

Nagpur-440 001, dated 12/10/2023

To

Deputy Director General of Forests (Central),
Ministry of Environment, Forests and Climate Change,
Government of India, New Secretariate Building, Ground Floor,
East Wing, Opposite VCA Stadium, Civil Lines, Nagpur 440 001.

Sub :- Submission of Draft Working Plan of Yavatmal Forest Division for the
Period 2022-23 to 2031-32 Regarding.

Reference :- 1. SCC meeting minutes held on dt 10/10/2022
2. Deputy Conservator of Forest, Working Plan, Yavatmal letter no desk -
5/WP/ 235, dt 14/08/2023

Vide reference at 1, PWPR of Yavatmal has been approved in SCC meeting
which was held on dt 10/10/2022.

Vide reference at 2, DWPR of Yavatmal has been submitted by Deputy
Conservator of Forest, Working Plan, Yavatmal for placing before the Standing
Consultative Committee (SCC).

Hence, a copy of the Draft Working Plan for Yavatmal Forest Division,
Yavatmal for the Period 2022-23 to 2031-32, is herewith submitted for further needful.
Schedule of the Standing Consultative Committee (SCC) meeting will be intimated
separately.

Encl- Copy of Yavatmal DWPR,
Vol - I and Vol - II

(B.S.Hooda)

Principal Chief Conservator of Forests
(Production and Management)
Maharashtra State

Copy to : Principal Chief Conservator of Forests (Head of Forest Force)
Maharashtra State for information.

Copy to : Conservator of Forest, Working Plan (East) Nagpur for information.

Copy to : Dy. Conservator of Forest, Working Plan, Yavatmal for information vide
reference at 2.

GOI letters -III

51
16/05/24
कसग-



Office of the Principal Chief Conservator of Forests (Head of Forest Force),
Maharashtra State, 'Van Bhavan', Ramgiri Marg, Civil Lines, Nagpur-440 001.
Ph.no. 0712-2556788 Web site : mahaforest.nic.in E-mail : pccfpmngp@mahaforest.gov.in

No.Desk-14/WP/ACF/165/23-24

Nagpur-440 001, dated 21/03/2024

Sub :- Minutes of the Standing Consultative Committee meeting held on 13/03/2024 for Approval of DWPRs.

The minutes of the Standing Consultative Committee meeting held at Command Control Room, Vanbhavan, Nagpur dated 13/03/2024 for approval of DWPRs of Yavatmal, Wadsa and Dahanu Divisions are enclosed herewith for information and necessary action.

Encl :- Meeting Minutes

(Signature)

(M. Srinivasa Rao)
Member Secretary
Standing Consultative Committee
&
Principal Chief Conservator of Forests
(Production and Management),
Maharashtra State

- To
1. CCF/CF (T) Thane, Gadchiroli, Yavatmal.
 2. DCF (T) Dahanu, Wadsa, Yavatmal.
 3. DCF (WP) Thane, Gadchiroli, Yavatmal.

Copy submitted with compliments along with enclosure to :

1. The Principal Chief Conservator of Forests (HoFF) M.S. & Chairman of SCC.
2. The Deputy Director General of Forests, IRO- Central, Regional Office, Nagpur.
3. The Principal Chief Conservator of Forests (Wildlife) M.S.
4. The Principal Chief Conservator of Forests, Maharashtra State Biodiversity Board.
5. The Additional Principal Chief Conservator of Forests (Budget, Planning & Development) M.S.
6. The Additional Principal Chief Conservator of Forests (Information, Technology & Policy) M.S.
7. The Additional Principal Chief Conservator of Forests (Conservation) M.S.
8. The Conservator of Forests (Working Plan) West- Pune, East-Nagpur
9. The Regional Director, Forest Survey of India.
10. Director, Tropical Forest Research Institute, Dakghar, R.F.R.C. Mandala Road Jabalpur.

File : G:\Priya\SCC Dt 10.10.2022 DWPR & PWPR And MEETING Minutes\SCC Meeting Minutes 13.03.2024.Docx.1

Minutes of Meeting of the Standing Consultative Committee for the State of Maharashtra held on 13/03/2024 for approval of DWPR

Government of Maharashtra, vide G.R. No. FDM-2015/CR-95/F-2 dated 29/04/2015 has constituted a Standing Consultative Committee (SCC) for the approval of Draft Working Plan Reports (DWPR) of various Forest Divisions of Forest Department in Maharashtra, before its submission to Government of India for approval.

In this connection, a meeting of the Standing Consultative Committee was organized on 13/03/2024 at Command Control Room, Vanbhavan, Nagpur. Shri. Shailesh Tembhurnikar, PCCF (HoFF), M.S., Nagpur chaired the meeting. The following members of the Committee and field officers were present in the meeting.

Sr. No.	Name	Designation
1	Shri. Shailesh Tembhurnikar	PCCF (HoFF), Maharashtra State and Chairman of SCC.
2	Shri. Maheep Gupta	PCCF (Wildlife), Maharashtra State.
3	Shri. P. Kalyan Kumar	APCCF (Budget, Planning and Development), M.S. / APCCF (Conservation) (ITP), M.S. (Additional charge)
4	Shri.S. Rameshkumar	CCF (T), Gadchiroli
5	Shreeelaxmi A	CF (WP-East), Nagpur (Additional charge)
6	Shri. V.T.Ghule	CF (T), Yavatmal
7	Shri Vijay Bhise	CF (WP-West), Pune
8	Shri Umesh Varma	DCF (RU), PCCF (P &M) Office
9	Shri M. Rajkumar	Scientist – D, Tropical Forest Research Institute, Jabalpur, MP
10	Shri. B. N. Naik	Assistant Director, Forest Survey of India, Nagpur
11	Ms. Madhumitha S.	DCF (T), Dahanu
12	Ms. Neenu Somraj	DCF (WP), Thane
13	Shri. Anand Reddy	DCF (WP), Yavatmal
14	Shri. Y.L.Keskar	DCF (WP), Pune
15	Shri.Milish Sharma	DCF (WP), Gadchiroli (Additional charge)
16	Ms. Priya Malwe	ACF (WP), Desk-14, PCCF (P &M) Office
	Shri Sunit Waghmare	Ranger Supervisor, Desk-14, PCCF (P &M) Office

Shri. Shailesh Tembhurnikar, PCCF (HoFF), M.S., Nagpur welcomed all the committee members and briefly introduced the agenda of the meeting.

After detailed discussion on the DWPRs, following suggestions / corrections were suggested by the Committee Members.

Circle	Division	Presented by	Name of the officer and Designation who raised issue	Suggestions to be incorporated	To be followed by	Time
1	2	3	4	5	6	7
Yavatmal	Yavatmal (DWPR)	Shri. Anand Reddy, DCF, WP, Yavatmal	Shri. S.G. Tenbhurnikar, PCCF (HoFF)	• Concept of ecological index to be introduced. • Biodiversity index to be incorporated. • Chapter regarding bio restoration of wetlands should also be introduced. • Chapter regarding forest landscape restoration concept be added. • Prescriptions of Working Circles concerned, what are the outcomes of previous plan be added. • Replantation of failed plantation area needs to be checked by CFTV CCF(T), reasons for failure be added. • Practicality of plantation v/s ANR model to be studied by DCF(T) during plan period. • Add SWOT analysis to important Working Circle.	Shri. Anand Reddy, DCF, WP, Yavatmal and concerned Territorial Division	Within 15 days
			Shri. Mahesh Gupta, PCCF (Wildlife)	• Man-animal conflict prevention plan should be prepared in Working Plan. • Mandatory GIS maps as per Working Plan Code-2014 to be attached. • Man-animal conflict following points to be included: - Mapping of conflict wild animal hotspots. - Compensation to be part of Right to Service Act		
			Shri M. Rajkumar, TFRI Jabalpur	• Habitat suitability model may be examined during plan period.		
			Shri. P. Kalyan Kumar, APCCF (Budget, Planning and Development)(TP)/Conservation M.S.	• Unclassified forest area to be examined and reclassified if necessary. • For encroachment, GIS data layers be used by WPO to cross check the data. • While demanding PHO grants, quantitative data should be maintained. • Details of Boundary Demarcation to be included.		
			Shreehami A. CF (WP East Nagpur) (Additional Charge)	• Include mitigation aspects for human wildlife conflict. • Development of Bamboo plantation, harvesting and processing to be included in plan.		
			Shri Umesh Varma DCF (RU)	• Include chapter on ToF, Soil Moisture Conservation Chapter to be incorporated.		
Committee's Remarks – The Committee approved the DWPR of Yavatmal Division subject to incorporating the above suggestions.						



GOVERNMENT OF MAHARASHTRA
FOREST DEPARTMENT

OFFICE OF THE DEPUTY CONSERVATOR OF FORESTS,
WORKING PLAN, YAVATMAL

Vanbhavan, 1st Floor, Opp. Church, Apsara Talkies Road, Yavatmal -445001



DCF/WPY/Deck-03/Steno/C.No.5/17/2023-24

Dt 16.04.2024

To, The Conservator of Forest,
Working Plan- East,
Nagpur.

Ref: - Letter No. 14/WP/ACF/165/23-24 dt. 21/03/2024- regarding minutes of the Standing Consultative Committee meeting held on 13/03/2024 for approval of DWPRs.

With reference to the subject cited above, the point wise compliances of Yavatmal division are as follows:

Sr. No.	Name of the officer and Designation who raised issue	Issues raised	Compliance
i.	Shri S.G. Tembhurnikar, PCCF (HoFF)	Concept of ecological index to be introduced.	Importance Value Index of all the enumerated species is provided in the section 3.2 of Part I, Volume I (Page no. 28-31).
ii.		Biodiversity index to be incorporated.	
iii.		Chapter regarding bio restoration of wetlands should also be introduced.	Prescriptions regarding wetland restoration are broadly covered in the Chapter 5 of Part I, Volume I - Conservation and Maintenance of Soil and Water resources, and more specifically in the section 5.3.
iv.		Chapter regarding forest landscape restoration concept be added.	Specific prescriptions are provided for restoration of forest landscapes based on the working circle and the topography of the landscape in the chapters 2- 5 of Part II, Volume I.
v.		Prescription of working Circles concerned, what are the outcomes of previous plan	Detailed analysis of the performance of the previous working plan is provided in the

		be added.	section 11.2.9 of Part I, Volume I (Page no.s 145-168).
vi.		Replantation of failed plantation area needs to be checked by CF(T) /CCF(T), reasons for failure be added.	To be taken up by the territorial DCF during the course of implementation of this plan.
vii.		Practicality of plantation v/s ANR model to be studied by DCF (T) during plan period.	
viii.		Add SWOT analysis to important Working Circle.	
ix.	Shri Maheep Gupta, PCCF (Wildlife)	Man-animal conflict prevention plan should be prepared in Working Plan.	Prescriptions are provided in the section 6.3.6. of Part II, Volume I (page no 277-286)
x.		Mandatory GIS maps as per Working Plan Code-2014 to be attached.	All the relevant GIS maps are provided in the plan.
xi.		Man-animal conflict following points to be included- - Mapping of conflict wild animal hotspots. - Compensation to be part of Right to Service Act.	Details are provided in the section 3.8.4 of Part I, Volume I (page no. 45 – 49).
xii.	Shri M. Rajkumar, TFRI Jabalpur	Habitat suitability model may be examined during plan period.	To be implemented by the DCF territorial during the course of the plan period.
xiii.	Shri P. Kalyan Kumar, APCCF (Budget, Planning and Development)/(ITP)/ Conservation M.S.	Unclassed forest to be examined and reclassified if necessary.	Unclassed forests are allocated compartment numbers and assigned working circles. They shall be worked on par with the reserved forests and protected forests.
xiv.		For encroachment, GIS data layers be used by WPO to cross check the data.	To be incorporated during the mid-term review of this plan.
xv.		While demanding PHO grants, quantitative data should be maintained.	To be implemented by the territorial DCF during the course of implementation of this plan.
xvi.		Details of Boundary Demarcation to be included.	Details are provided in the section 12.1 of Chapter 12, Part II, Volume I.
xvii.	Smt. Shrilaxmi A. CF (WP East Nagpur) (Additional Charge)	Include mitigation aspects for human wildlife conflict.	Details are provided in the section 3.8.4 of Part I, Volume I (page no. 45 – 49).
xviii.		Development of Bamboo plantation, harvesting and processing to be included in plan.	Plantation of bamboo is prescribed in Chapter 16, Part II, Volume I. However, considering the very small extent of aerial spread of bamboo (0.14 %, as per the stock mapping), separate

xvix	Shri Umesh Verma DCF (RU)	Include chapter on TOF, Soil Moisture Conservation Chapter to be incorporated.	prescriptions for harvesting are not provided. A separate chapter is provided for TOF- Chapter 16, Part II, Volume I. And details on Soil and Moisture Conservation is provided in Chapter 5 of Part I, Volume I and section 12.6 of Chapter 12 of Part II of Volume I.

Attachment- Updated Draft Working Plan of
Yavatmal Forest Division


(Anand Reddy Yellu, IFS)
Dy. Conservator of Forest,
Working Plan Division,
Yavatmal

- 17.3 Letter of MoEFCC, Regional Office, Nagpur Dt. 12.11.2024 Review Meeting of Yavatmal DWPR and its Compliance and certificate regarding Final approval of Draft Working Plan by DCF, Yavatmal



भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FORESTS & CLIMATE CHANGE
Regional Office, Ground Floor, East Wing,
New Secretariat Building Civil Lines, Nagpur - 440001,
apcccentral-nep-mef@gov.in



F.No. 12-9/2004(FOR)/13730

Date: 12.11.2024

To,

The Principal Chief Conservator of Forests (P & M)
Van Bhawan, Ramgiri Road, Civil Lines,
Nagpur - 440001.

Subject: Review meeting to discuss the pending Working Plans of Pandharkawada, Jawhar, Dahanu and Yavatmal Forest Division, Maharashtra Forest Department - Regarding.

Reference:

1. DWPR of Pandharkawada Forest Division submitted vide letter No. Desk-14/WP//ACF/214/24-25 dated 06.08.2024;
2. DWPR of Jawhar Forest Division submitted vide letter No. Desk-14/WP//ACF/192/24-25 dated 10.06.2024;
3. DWPR of Dahanu Forest Division submitted vide letter No. Desk-14/WP//ACF/193/24-25 dated 21.06.2024;
4. DWPR of Yavatmal Forest Division submitted vide letter No. Desk-14/WP//ACF/189/24-25 dated 10.06.2024.

Sir,

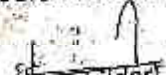
I am directed to refer to the subject and reference cited above and to inform that, DWPRs pertaining to four Forest Division i.e. Pandharkawada, Jawhar, Dahanu and Yavatmal Forest Divisions have been received from the State Forest Department seeking approval of the Central Government as per the provisions of VSS Rules, 2023 and National Working Plan Code 2023.

2 Preliminary scrutiny revealed certain shortcomings in the DWPRs and requires clarification. Hence, review meeting is scheduled on 14th November 2024 at 10:15 AM at Regional Office to review above mentioned DWPRs.

3 In view of the above, concerned officials from the State Forest Department may kindly be asked to attend the review meeting with relevant records.

This is issued with the approval of competent authority.

Yours faithfully,


(C.B. Tashildar)
AIGF (Central)

“वृक्षवल्गो आम्हा सोपरे वनधरे”
दूरध्वनी नं.-0712 2556788
Email ID:-
pccfpranagpur@mahaforrest.gov.in
dvcfpranagpur@mahaforrest.gov.in

महाराष्ट्र वन विभाग
प्रधान मुख्य वनसंरक्षक (वन बल प्रमुख) महाराष्ट्र राज्य, नागपूर यांचे कार्यालय
वन भवन रामगिरी रोड, सिव्हील लाईन्स, नागपूर - 440 001

ई-मेलव्दारे/

क्र. कक्ष-14/का.आ./सवस/प्र.क्र. /2024-25/ 256

दिनांक 13 नोव्हेंबर, 2024

विषय :- यवतमाळ, पांढरकवडा, डहाणू व जव्हार वन विभागाचे DWPR चे सादरीकरण करणेबाबत.

संदर्भ :- केंद्र शासनाकडील पत्र क्रमांक 12-9/2004(FOR)/13730,
दिनांक 12/11/2024

विषयांकित प्रकरणौ, संदर्भित पत्राचे अवलोकन व्हावे.

2. संदर्भित पत्रात कळविल्याप्रमाणे यवतमाळ, पांढरकवडा, डहाणू व जव्हार वन विभागाचे DWPR चे सादरीकरण दिनांक 14/11/2024 रोजी सकाळी 10.15 वाजता करावयाचे आहे. करिता खालीलप्रमाणे अधिकारी यांनी DWPR चे सादरीकरण करावे

अ. क्र.	वनवृत्त	वनविभाग	वेळ	सादरीकरण करणारे अधिकारी	
1.	यवतमाळ	यवतमाळ	सकाळी 10.15 ते 10.45	श्री. धनंजय वायभासे,	श्री. धनंजय वायभासे, DCF (WP) यवतमाळ
2.		पांढरकवडा	सकाळी 10.45 ते 11.15	DCF (T) यवतमाळ व पांढरकवडा	
3.	ठाणे	डहाणू	सकाळी 11.15 ते 11.45	श्री. निरंजन दिवाकर DCF (T) डहाणू	डॉ. सायपुन शेख, DCF (WP) ठाणे
4.		जव्हार	सकाळी 11.45 ते 12.15	डॉ. सायपुन शेख, DCF (T) जव्हार	

3. DWPR चे सादरीकरण केल्यानंतर तसा अहवाल या कार्यालयास सादर करावा
सहपत्र - बरीलप्रमाणे

(एम. श्रीनिवास राव)

प्रधान मुख्य वनसंरक्षक (उत्पादन व व्यवस्थापन),
महाराष्ट्र राज्य

प्रती,

उप वनसंरक्षक (प्रादेशिक), डहाणू, जव्हार, यवतमाळ, पांढरकवडा.

उप वनसंरक्षक (कार्य आयोजना), यवतमाळ, ठाणे.

प्रतिलिपी - मुख्य वनसंरक्षक (प्रादेशिक), ठाणे / वनसंरक्षक (प्रादेशिक), यवतमाळ, यांना माहिती व
आवश्यक कार्यवाहीस अग्रेंषित.

प्रतिलिपी- वनसंरक्षक (कार्य आयोजना), पुर्व / पश्चिम पुणे यांना माहिती व आवश्यक पुढील कार्यवाहीस
अग्रेंषित.



महाराष्ट्र शासन
वनविभाग

उप वनसंरक्षक, कार्य आयोजना, यवतमाळ यांचे कार्यालय
वन भवन, 1 ला माळ, चर्च रोड, यवतमाळ - 445001 (म.र.)

दूरध्वनी क्रमांक: 07232-244289, Email ID: cfwpyavatala@mahaforest.gov.in, cfwpyvt@gmail.com

क्रमांक: उवसं/काआ/कक्ष-4/आस्था/228/2024-25

यवतमाळ दिनांक 13/11/2024

विषय :- यवतमाळ व पांढरकवडा, वनविभागाचे DWPR चे सादरीकरण करण्याबाबत.

संदर्भ :- 1) प्रधान मुख्य वनसंरक्षक (उत्पादन व व्यवस्थापन) महाराष्ट्र राज्य यांचे पत्र क्र. कक्ष-

14/का.आ./सवस/प्र.क्र. /2024-25/256 दि. 13/नोव्हेंबर/2024

2) केंद्र शासनाकडील पत्र क्रमांक 12-9/2004(FOR)/13730, दिनांक 12/11/2024

विषयांकित प्रकरणी, संदर्भित पत्राचे अवलोकन व्हावे.

संदर्भित पत्रात कळविल्याप्रमाणे यवतमाळ व पांढरकवडा, वन विभागाचे DWPR चे सादरीकरण दि.14/11/2024 रोजी सकाळी 10.15 वाजता करावयाचे आहे. परंतु खालील स्वाक्षरी करते हे आईच्या आजारपनास्तव किरकोळ रजेवर मुख्यालयाबाहेर सुट्टीवर असल्याने सदर सादरीकरण करण्याकरिता श्री संदीप भरत गिरी, सहाय्यक वनसंरक्षक (कार्यआयोजना) यांना प्राधिकृत करण्यात येत आहे. तरी सदर सादरीकरणास परिपूर्ण माहितीसह वेळेवर उपस्थित राहावे.

DWPR चे सादरीकरण करून संपूर्ण माहिती दिल्यानंतर तसा अहवाल या कार्यालयास सादर करावा.
सहपत्र :- वरील प्रमाणे.

(धनंजय वायभासे, भा.व.से.)
उपवनसंरक्षक,
कार्य आयोजना, यवतमाळ.

✓ प्रती.

श्री संदीप भरत गिरी, सहाय्यक वनसंरक्षक (कार्यआयोजना) यवतमाळ.

प्रतीलीपी : मुख्यवनसंरक्षक (प्रादेशिक) यवतमाळ यांना माहितीस व आवश्यक कार्यवाहीस सविनय सादर.

प्रतीलीपी : वनसंरक्षक (कार्यआयोजना) पुर्व नागपुर यांना माहितीस व आवश्यक कार्यवाहीस सविनय सादर.



"वृक्षमल्ली अन्तः रोवरे वनवरे"
दूरध्वनी क्र. ०२१२-२५५६९८८
Web site: mahaforest.nic.in
Email: ocd@mahaforest.gov.in



महाराष्ट्र शासन

प्रधान मुख्य वनसंरक्षक (वन बल प्रमुख)

'वनभवन', रामगिरी मार्ग, सिव्हील लाईन्स, नागपूर-४४० ००१

प्रधान मुख्य वनसंरक्षक (उत्पादन व व्यवस्थापन), महाराष्ट्र राज्य

विषय : डहाणू, जव्हार व यवतमाळ वन विभागाच्या प्रारूप कार्य
आयोजनेस अंतिम मंजूरीबाबत.

क्र. कस-१४/सवसं/२६८/२४-२५

नागपूर-१, दिनांक ३०.१२.२०२४

प्रति

उपवनसंरक्षक,

कार्य आयोजना, ठाणे / यवतमाळ.

संदर्भ :- भारत सरकार, पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय यांचेकडील पत्र क्र.

F.No.: 12-9 / 2004 (FOR)/13861 दिनांक 24.12.2024

उपवनसंरक्षक, कार्य आयोजना विभाग, ठाणे / यवतमाळ यांना कळविण्यात येते की, उपरोक्त संदर्भित पत्रान्वये केंद्र शासनाने डहाणू, जव्हार व यवतमाळ वन विभाग कार्य आयोजनेमध्ये मुद्द्यांची पूर्तता करणेस्तव वृत्त्या उपस्थित केलेल्या आहेत. सेबत संदर्भित पत्राची छायांकीत प्रत सहपत्रित करण्यात येत आहे.

२.० सदर पत्रात केंद्र शासनाने उपस्थित केलेल्या मुद्द्यांची पूर्तता करण्यात येवून तसेच सदर प्रत अभ्यासून पूर्तता अहवाल केंद्र शासनास सादर करण्याच्या दृष्टीने या कार्यालयास १ आठवड्याच्या आत सादर करावा.

सहपत्र - वरिलप्रमाणे.


(एम. श्रीनिवास राव)

प्रधान मुख्य वनसंरक्षक (उत्पादन व व्यवस्थापन)

महाराष्ट्र राज्य

प्रतिलिपी - प्रधान मुख्य वनसंरक्षक (वन बल प्रमुख), म.रा., नागपूर यांना माहितीकरीता सादर.

प्रतिलिपी - मुख्य वनसंरक्षक (प्रादेशिक), ठाणे/ वनसंरक्षक (प्रादेशिक), यवतमाळ यांना सहपत्रासह माहितीकरीता अग्रेषित.

प्रतिलिपी - वनसंरक्षक (कार्य आयोजना), पुर्व नागपूर/ पश्चिम पुणे यांना माहितीकरीता अग्रेषित.

प्रतिलिपी - उपवनसंरक्षक (प्रादेशिक), डहाणू, जव्हार व यवतमाळ यांना माहितीकरीता अग्रेषित.



भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FORESTS & CLIMATE CHANGE
Regional Office, Ground Floor, East Wing,
New Secretariat Building Civil Lines, Nagpur - 440001,
apccfcetral-ngp-mef@gov.in



F. No.: 12-9/2004(FOR)/ 13861

Date: 24.12.2024

To,

The Principal Chief Conservator of Forests (HoFF)
Govt. of Maharashtra, Van Bhawan,
Ramgiri Road, Civil Lines, Nagpur-440001.

Subject: Approval of Working Plan for Dahanu, Jawhar, and Yavatmal Forest Divisions in Maharashtra

Reference: Review of Working Plans held in the Regional Office on 14.11.2024

Sir,

Your kind attention is invited to the meeting held at the Regional Office on 14.11.2024, convened to review the working plan proposals submitted by the Maharashtra Forest Department for approval in accordance with the prevailing rules. The meeting was attended by the PCCF (P&M) and other officials from the Maharashtra Forest Department. Based on the discussions and the review of the submitted working plan proposals, you are kindly requested to take necessary action on the following observations:

1. Yavatmal Forest Division:

- The last approved working plan for the Yavatmal Forest Division expired in 2021-22. Subsequently, approval was granted for a one-year working scheme (2022-23) at the request of the State Forest Department (SFD). However, no approved working scheme or plan was in force for the period 2023-24.
- Hence, the State Government is requested to clarify how the forest area was managed during the intervening period without a valid working plan. Additionally, a certificate detailing the departmental activities carried out during this period, if any, along with the working scheme, for the same may be submitted for consideration and approval by the SFD.

2. Jawhar Forest Division:

- The last approved working plan for the Jawhar Forest Division was conveyed by the Government of India through a letter

dated 04.12.2009, covering the period from 2009-10 to 2018-19. Since then, no working scheme has been approved for the period 2019-20 to date. However, the SFD has proposed the current working plan period as 2023-24 to 2032-33.

- Considering the significant lapse of time since the expiry of the last working plan, the SFD is requested to submit a detailed report on the management of the forests covered under the expired working plan during the period 2019-20 to date. Furthermore, a certificate detailing the departmental activities undertaken during this period, if any, along with the working scheme, for the same may be submitted for consideration as per the provisions of the National Working Plan Code and MoEF&CC guidelines.

3. Dahanu Forest Division:

- The last approved working plan for the Dahanu Forest Division was conveyed by the Government of India through a letter dated 01.06.2011, covering the period from 2010-11 to 2019-20. Since then, no working scheme has been approved for the period 2020-21 to date. However, the SFD has proposed the current working plan period as 2023-24 to 2032-33.
- Considering the considerable lapse of time since the expiry of the last working plan, the SFD is requested to submit a detailed report on the management of the forests covered under the expired working plan during the period 2020-21 to date. Additionally, a certificate detailing the departmental activities undertaken during this period, if any, along with the working scheme, for the same may be submitted for consideration as per the provisions of the National Working Plan Code and MoEF&CC guidelines by the SFD.

This is issued with the approval of the Competent Authority, Regional Office (WCZ), MoEF&CC, Nagpur.

Yours faithfully,


(C.B. Tashildar)
AIGF (Central)

Copy to:

1. The Secretary (Forests), Revenue and Forest Department, Government of Maharashtra, Mantralaya, Mumbai-400032.
2. The Additional Director General of Forests (FC) Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Jor Bagh, New Delhi-110003.
3. Guard File.


(C.B. Tashildar)
AIGF (Central)



Office of the Deputy Conservator of Forest (T) Yavatmal

"Vanbhavan" Administrative Building, 1st Floor, Church Road, Civil Line, Yavatmal
Email ID :- dycfyavatmal@mahaforest.gov.in ; dycfym@gmail.com

Ph.(07232) 242453

Out.No.Dy.DCF(T)/YTL/Survey/

/2024-25

Yavatmal-445001 / Dt. 15/01/2025

To,

Deputy Conservator of Forest
Working Plan Division,
Yavatmal.

Sub :- Regarding final approval of draft working plan for Yavatmal Forest Division.

Ref :- 1) The Principle Chief Conservator of Forest (Production & Management) M.S.Nagpur-1 / Desk No-14 / ACF / 268 / Dt.30.12.2024
2) Ministry of environment forest & climate Change Regional Officer Nagpur F.No.12-9/2004(FOR)/ 13861/Dt. 24.12.2024

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As per the above reference no.1 and 2, Deputy Conservator of Forest (T) Yavatmal Forest Division, Yavatmal here Certifying that detailing the Departmental activities carried out during the period 2022-23 by Yavatmal Forest Division given as below.

Table 1. Fire Protection Work

Sr.No.	Year	Type of work	Quantity (Km.)	Scheme	Expenditure
1	2022-23	Cutting & Buring Fire line, Fire watcher	1338.00 Km.	Non Plan	15.00
2	2022-23	Modern Forest Fire Control & Management	--	Central Sponsered	2.31
3	2022-23	Fire Watchers	--	CAMPA	4.00
				Total :	21.31

Table 2. Boundary Demarcation

Sr.No.	Year	Type of work	Quantity (Km.)	Scheme	Expenditure
1	2022-23	1/5 th demarcation.	658.06 Km.	Non Plan	20.00 Lakh

Table 3. Building construction / Repair

Sr.No.	Year	Type of work	Quantity (No.)	Scheme	Expenditure
1	2022-23	Forest Building Repairs	1	State Plan	6.50 Lakh

Table 5.1 Plantation Works

Sr.No.	Year	Scheme	Total Area in Ha.	No. of plants	Expenditure
1	2022-23	Fodder CAMPA PPO + Nursery	100.00	500000	248.68
2	2022-23	Fodder CAMPA FYO Work	249.00	1245000	252.26
3	2022-23	Fodder CAMPA SYO Work	309.00	1545000	169.37
		Total :-	658.00	3290000	670.31

Table 5.2 Plantation Works (Non Plan) (Artificial Regeneration) Year 2022-23

Sr.No.	Range	Beat / Compt. No.	Total Area in Ha.	No. of plants	Species
1	Ner	Vyahali / 402	20.00	22220	Teak & Mix.
2	Yavatmal	Borgaon / 486	20.00	22220	Teak & Mix.
3	Wadgaon	Yelabara / 215	15.00	16665	Teak & Mix.
4	North Arni	Bortgaon / 293	20.00	22220	Teak & Mix.
5	Hiwari	Bhamb / 284	15.00	16665	Teak & Mix.
		Total :-	90.00	99990	

Table 5.3 Plantation Works (MAP) 4406-0492 Artificial Regeneration Year 2022-23

Sr.No.	Range	Beat / Compt. No.	Total Area in Ha.	No. of plants	Species
1	Yavatmal	Karalgaon / 464	10.00	11111	Teak & Mix.
2	Ner	Ner / 425	10.00	18000	Teak & Mix.
3	South Arni	Sakhartanda / 29	10.00	10510	Teak & Mix.
4	South Arni	Belora / 21	15.00	4170	Teak & Mix.
5	South Arni	Chatari / 23	20.00	21386	Teak & Mix.
6	Yavatmal	Waraj / 410	20.00	22177	Teak & Mix.
7	Yavatmal	Sarul / 527	10.00	9000	Teak & Mix.
8	Yavatmal	Madkona / 357	20.00	22220	Teak & Mix.
9	North Arni	Pandhurna / 16	17.00	18700	Teak & Mix.
10	North Arni	Devurwadi / 58	20.00	22000	Teak & Mix.
11	Hiwari	Warud Ijara / 300	11.00	11000	Teak & Mix.
12	Hiwari	Saykheda / 286	20.00	19000	Teak & Mix.
13	Hiwari	Kharad / 501	12.00	10100	Teak & Mix.
14	Ner	Kolura / 422	20.00	22000	Teak & Mix.
15	Ner	North Wadhona / 414	20.00	22000	Teak & Mix.
16	Darwaha	Uchegaon / 172	20.00	18000	Teak & Mix.
17	Darwaha	Chani / 312	20.00	18000	Teak & Mix.
18	Darwaha	Ghatkinhi / 196	15.00	13500	Teak & Mix.
19	Jodmoha	Mendhala / 359	15.00	16650	Teak & Mix.
20	Jodmoha	Rajur / 345	10.00	11400	Teak & Mix.
21	Jodmoha	Durg / 341	15.00	16500	Teak & Mix.
		Total :-	330.00	337424	

Table 6.1 Soil and Water Conservation Work

Sr.No.	Year	Type of Works	Number of Work	Scheme
1	2022-23	Construction of Forest pond/Vantalaw/Storage Tank	29	District Plan
2	2022-23	MNB/ Earthan Nala Bandh	5	District Plan
3	2022-23	Deep CCT	39	District Plan
4	2022-23	Deselting of Forest Pond / MNB	18	District Plan
5	2022-23	Construction of Trench cum Mount	9	District Plan
6	2022-23	Construction of Cement Nala Bandh	3	District Plan
		Total :-	103	

Table 6.2 Soil and Water Conservation Work

Sr.No.	Year	Type of Works	Number of Work	Scheme	Expenditure
7	2022-23	Construction of Forest pond/Vantalaw/Storage Tank	19	CAMPA	44.88
8	2022-23	MNB/ Earthan Nala Bandh	1	CAMPA	4.63
9	2022-23	Deep CCT	60 Ha.	CAMPA	20.08
10	2022-23	Construction of Gabian Bandhara	49	CAMPA	22.93
11	2022-23	Construction of Cement Nala Bandh	7	CAMPA	82.60
		Total :-	76		175.12

Table 7. Post Harvest Operation

Sr.No.	Year	Type of work	Quantity (Ha)	Scheme	Expenditure
1	2022-23	Coup.no X CBO work	299.15	Non plan	4.74 Lakh

Table 8. Yield and Revenue Realised

Sr.No.	Year	Perticulars	Quantity (Cum)	Revenue (Rs.)
1	2022-23	Timber	2024.415	392.18 Lakhs
2	2022-23	Fire Wood	374.620	13.92 Lakhs

Sr.No.	Year	Unit Auctioned	Target (Std.Dags)	Actual Yield Dags	Revenue (Actual)
1	2022-23	1-Jodmoha	700	0	0
2	2022-23	2-Wadgaon	1300	1349000	923.753
3	2022-23	3-Borgaon	350	305000	294.42
4	2022-23	4-Hiwari	900	1011000	418.503
5	2022-23	5-Yavatmal	710	601000	674.92
6	2022-23	6-Lonbehal	770	0	0
7	2022-23	7-Sawali	780	1042000	409.878
8	2022-23	8-Darwha	904	225000	265.923
9	2022-23	9-Ner	380	78000	281.919
		Total :-	6794	4611000	3269.316

SD /-

(Dhananjay Waybhase IFS)
Deputy Conservator of Forest
Yavatmal Forest Division, Yavatmal



महाराष्ट्र शासन

GOVERNMENT OF MAHARASHTRA



OFFICE OF THE DY. CONSERVATOR OF FORESTS, WORKING PLAN, YAVATMAL
VAN BHAVAN, 1ST FLOOR, SHI CHOWK, CHURCH ROAD, YAVATMAL
Email - cfwp.yvt@gmail.com, Tele no.07232-244289

Sub:- Approval of Working Plan of Yavatmal Forest Division.

No./DCF/WP/YT/315/2024-25

Yavatmal, Dated: 16/01/2025

To,

Conservator of Forest,
Working Plan- East,
Nagpur.

- Ref: - 1. Deputy Conservator of forest (T), Yavatmal Forest Division/No/survey/5271/2024-25 Date 15.01.2025
2. The Principle chief conservator of Forest (Production & Management) M.S. Nagpur-1 /Desk No-14/Acf/268 Date.30.12.2024
3. Ministry of environment forest & climate Change Regional office Nagpur F.No12-9/2004(FOR)/13861 Date 24.12.2024

With reference to the subject cited above, working scheme 2022-23 for Yavatmal Forest Division approved by MoEF&CC Nagpur letter No F.No WP-42/RO/2017-NGP/11071 Date 31.01.2023 and the period 2023-24 no approved working scheme or plan was in force for period clarification for intervening period as follows.

During the intervening period without violating any provisions of VSSA, 1980 the inevitable protection activities like Fircline cutting & burning, maintaining of 1/5 th Boundary Pillers & new boundary pillers, maintenance of soil and moisture conservation structures and new soil and moisture conservation (SMC) works, wind fallen timber extraction, post-harvest operations (PHO) in coupe no XI which was worked during 2022-23 period with the approval. Artificial Regeneration, Natural Regeneration and Fodder Plantation work was done in areas where felling was done during the approved scheme period of 2022-23 and treatment of 1st year operation to 5th year operation of plantation was done which are subsidiary Silvicultural operations. No tree felling carried out during intervening period only unavoidable work which was mention done in intervening period i.e. 2023-24 hence requested to you please consider this activities and approve the Draft Working Plan of Yavatmal Forest Division.

A letter given by DCF, Yavatmal Forest Division about detailing the departmental activities carried out during the intervening period (2023-24) also submitting with this letter.

(Dhananjay Waybhase, IFS)
Dy. Conservator of Forest
Working Plan Division,
Yavatmal

Copy To :

1. The Principle chief conservator of Forest (Production & Management) Maharashtra State, Van Bhawan, Ramgiri Road, Civil Lines, Nagpur - 440001
2. The Conservator of forest Yavatmal (T), Yavatmal Circle, Vanbhawan, Church Road Yavatmal-445001
3. Deputy Conservator of forest (T), Yavatmal Forest Division, Yavatmal - 445001

Out.No.Dy.DCF(T)/YTL/Survey/

/2024-25

Yavatmal-445001 / Dt.

/01/2025

To,

Deputy Conservator of Forest
 Working Plan Division,
 Yavatmal.

Sub :- Regarding final approval of draft working plan for Yavatmal Forest Division.

Ref :- 1) The Principle Chief Conservator of Forest (Production & Management) M.S.Nagpur-1 / Desk No-14 / ACF / 268 / Dt.30.12.2024
 2) Ministry of environment forest & climate Change Regional Officer Nagpur F.No.12-9/2004(FOR)/ 13861/Dt. 24.12.2024

000

As per the above reference no.1 and 2, Deputy Conservator of Forest (T) Yavatmal Forest Division, Yavatmal here Certifying that detailing the Departmental activities carried out during the period 2023-24 by Yavatmal Forest Division given as below.

Table 1. Fire Protection Work

Sr.No.	Year	Type of work	Quantity (Km.)	Scheme
1	2023-24	Cutting & Buring Fire line, Fire watcher	2908.12	Non Plan
2	2023-24	Cutting & Buring Fire line, Fire watcher	238.14	CAMPA
3	2023-24	Fire and Fire Protection	1198.69	DPDC

Table 2. Boundary Demarcation

Sr.No.	Year	Type of work	Quantity (No.)	Scheme
1	2023-24	Construction of class I & II boundry pillar	372	CAMPA

Table 3. Enchroachment Removal

Sr.No.	Year	Type of work	Quantity (Ha.)	Scheme
1	2023-24	Enchroachment Removal, comp.no. 593, Balalinagar	15.00	CAMPA

Table 4. Building construction / Repair

Sr.No.	Year	Type of work	Quantity (No.)	Scheme
1	2023-24	Construction of Type 1 quarter	2	CAMPA
2	2023-24	Construction of Range office	1	CAMPA
3	2023-24	Construction of womens rest room	1	CAMPA
4	2023-24	Building Repair	12	DPDC

Table 5. Plantation Works

Sr.No.	Scheme	Year of plantation	Total Area in Ha.	No. of plants
1	CAMPA (Foder)	2023-24	120.00	600000
2	CAMPA (A.N.R.)	2023-24	55.00	37375
3	MAP(A.R.)	2023-24	370.00	376250
		Total :-	545.00	1013625

Table 6.1 Soil and Water Conservation Work

sr. No.	Year	Type of Works	Number of Work	Scheme
1	2023-24	Construction of Forest pond/Vantalav/Storage Tank	40	DPDC
2	2023-24	MNB/ Earthan Nala Bandh	3	DPDC
3	2023-24	Deep CCT	27	DPDC
4	2023-24	Lose Bolder structure	5	DPDC
5	2023-24	Construction of Trench cum Mount	7	DPDC
		Total :-	82	

Table 6.2 Soil and Water Conservation Work

sr. No.	Year	Type of Works	Number of Work	Scheme
1	2023-24	Construction of Gabliyan Bandhara	20	CAMPA
2	2023-24	CNB	2	CAMPA
3	2023-24	Construction of forest pond / Vantalav	15	CAMPA
4	2023-24	Mati Nala Bandh	4	CAMPA
		Total :-	41	

Table 7. Post Harvest Operation

Sr.No.	Year	Type of work	Quantity (Ha)	Scheme
1	2023-24	Coup.no XI CBO work	647.88	Non plan

YAVATMAL FOREST DIVISION, YAVATMAL

General District Plan Year 2023-24 Fire Protection Work Details

Sr. No.	Year	Head & Schema	Range	Fire Line		Fire line Protection Labour		Material Supply Expenditure	Total Expenditure
				Km.	Expenditure	Man Days	Expenditure		
1	2	3	4	5	6	7	8	9	10
1	2023-24	District Plan Forest Protection Work (2406-B145)	Hlwari	262.35	578371	2160	946987	0	1525358
2	2023-24		South Ami	0	0	585	262057	0	262057
3	2023-24		Ner	486.64	1223937	528	253080	0	1477017
4	2023-24		Yavatmal	314.7	586448	810	377344	0	963792
5	2023-24		Wadgeon	155	342550	540	236747	0	579297
		Total		1198.69	2731306	4623	2076215	0	4807521

YAVATMAL FOREST DIVISION, YAVATMAL

Building Work Information for Year 2023-24

Sr. No.	Year	Head & Scheme	Range	Work Plance	Comp. No.	Name of work
1		2	3	5	6	4
1	2023-24	District Plan Forest Building (4406-3982)	Yavatmal	Yavatmal	-	Construction of Womens Toilet at VANSHREE Bunglow at Yavatmal in Yavatmal Range
2	2023-24		Yavatmal	Yavatmal	-	Construction of Open Pagoda in the premises of VANSHREE Forest House at Yavatmal in Yavatmal Range
3	2023-24		Yavatmal	Yavatmal	-	Construction of Internal Road in the premises of VANSHREE Forest House at Yavatmal in Yavatmal Range
4	2023-24		Yavatmal	Yavatmal	-	Construction of Store Room in the premises of VANSHREE Forest House at Yavatmal in Yavatmal Range
5	2023-24		Yavatmal	Yavatmal	-	Renovation of VANSHREE Forest Bunglow at Yavatmal in Yavatmal Range
6	2023-24		Yavatmal	Yavatmal	-	Construction of Parking Shade in the premises of VANSHREE Forest House at Yavatmal in Yavatmal Range
7	2023-24		Yavatmal	Yavatmal	-	Renovation of VANSHREE Forest Bunglow Part-2 at Yavatmal in Yavatmal Range
8	2023-24		Yavatmal	Yavatmal	-	Construction of Pathway in the premises of VANSHREE Forest House at Yavatmal in Yavatmal Range
9	2023-24		Yavatmal	Yavatmal	-	Construction of Compound Wall to VANSHREE Forest House at Yavatmal in Yavatmal Range
10	2023-24		Yavatmal	Yavatmal	-	Repaire & Renovation to VANSHREE Forest Bunglow at Yavatmal in Yavatmal Range
11	2023-24		Yavatmal	Yavatmal	-	Construction of Hutatma Smarak at Yavatmal in Yavatmal Range
12	2023-24		Yavatmal	Yavatmal	-	Construction of Main Gate to VANSHREE Forest Bunglow at Yavatmal in Yavatmal Range

YAVATMAL FOREST DIVISION, YAVATMAL

Central Sponsered Scheme Year 2023-24 Fire Protection Work Details

Sr. No.	Year	Head & Scheme	Range	Fire Line		Fire line Protection Labour		Material Supply Expenditure	Total Expenditure
				Km.	Expenditure	Man Days	Expenditure		
1	2	3	4	5	6	7	8	9	10
1	2023-24	Central Sponsered Scheme	Yavatmal	635.19	359000	0	0	0	359000
	Total			635.19	359000	0	0	0	359000

Sd/-

(Dhananjay Waybhase IFS)
Deputy Conservator of Forest
Yavatmal Forest Division, Yavatmal



Government of Maharashtra
Office of the Principal Chief Conservator of Forests (Head of Forest Force)
Maharashtra State, 'Van Bhavan', Rangiri Marg, Civil Lines, Nagpur-440 001.
Ph.No. 0712-2556788 Web site : mahaforest.nic.in E-mail : pccfpmngp@mahaforest.gov.in

No.Desk-14/WP/ACF/ 276/24-25

Nagpur-440 001, dated 04.02.2025

To

Deputy Director General of Forests (Central),
Ministry of Environment, Forests and Climate Change,
Government of India, New Secretariate Building, Ground Floor,
East Wing, Opposite VCA Stadium, Civil Lines, Nagpur 440 001.

Subject : Approval of Working Plan of Dahanu, Jawhar and Yavatmal Forest Divisions
in Maharashtra

- Ref. :-
1. This office letter No. Desk-14/WP/2024-25/189 dt 10.06.2024
 2. This office letter No. Desk-14/WP/2024-25/193 dt 21.06.2024 & 192 dt 10.06.2024
 3. Your office letter No.12-9/2004(FOR)/13861 Dated 24.12.2024.
 4. The Deputy Conservator of Forests (WP), Yavatmal letter No. DCF/WP/YTL/315/2024-25 Dated 16.01.2025.
 5. The Chief Conservator of Forests (Territorial), Thane letter No. Desk 14/Land/84/2024-25 Dated 23.01.2025.

Vide reference at 1 and 2 , draft Working Plan of Yavatmal Forest Division Period 2023-24 to 2032-33 , Dahanu Forest Division Period 2023-24 to 2032-33 and Jawhar Forest Division Period 2023-24 to 2032-33 has been submitted for approval to your office.

2.0 Vide reference at 3, IRO has raised the queries that to submit a detailed report on the management of the forests covered under the expired working plan during the period 2019-20 to till date.

3.0 Accordingly, vide reference at 4 and 5 , a detailed report on the management of the forests covered under the expired working plan during the period 2019-20 to till date is submitted by the Deputy Conservator of Forests (WP), Yavatmal and the Chief Conservator of Forests (Territorial), Thane for sanction.

4.0 Therefore, it is kindly requested to approve the Draft Working Plan of Yavatmal Forest Division Period 2023-24 to 2032-33, Dahanu Forest Division Period 2023-24 to 2032-33 and Jawhar Forest Division Period 2023-24 to 2032-33 respectively.

Encl. : detailed report on the management of the forests covered under the expired working plan during the period 2019-20 to till date .


(M. Srinivasa Rao)
Principal Chief Conservator of Forests
(Production and Management)
Maharashtra State

1. Copy forwarded to the Chief Conservator of Forests (Territorial), Thane and the Conservator of Forests (Territorial), Yavatmal for information.
2. Copy forwarded to the Deputy Conservator of Forests (Territorial), Dahanu, Jawhar and Yavatmal for information.
3. Copy forwarded to the Deputy Conservator of Forests (WP), Thane and Yavatmal for information.

17.4 Approval of Working Plan of Yavatmal Forest Division for period 2023-24 to 2032-33 its letter and related documents.



“वृक्षवल्ली आम्हा सतेयरे वनधरे”
दूरध्वनी क्र. ०८१२-२५५६७८८
Web site: mahaforest.nic.in
Email: pcofpmngp@mahaforest.gov.in



महाराष्ट्र शासन

प्रधान मुख्य वनसंरक्षक (वन बल प्रमुख)

‘वनभवन’, रामगिरी मार्ग, सिव्हील लाईन्स, नागपूर-४४० ००१

प्रधान मुख्य वनसंरक्षक (उत्पादन व व्यवस्थापन), महाराष्ट्र राज्य

विषय: यवतमाळ वन विभागाच्या सन २०२३-२४ ते २०३२-३३ पर्यंत या कालावधीच्या प्रारूप कार्य आयोजनेस अंतिम मंजूरीबाबत.

क्र. कक्ष-१४/सवसं/ 286 /२४-२५
नागपूर-१. दिनांक 28/02/25.

प्रति

उपवनसंरक्षक,
कार्य आयोजना, यवतमाळ.

संदर्भ :- भारत सरकार, पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय यांचेकडील पत्र
क्र.F.No.१२-५५/९८(FOR)/१४०४० दिनांक २७.०२.२०२५

उपवनसंरक्षक, कार्य आयोजना विभाग, यवतमाळ यांना कळविण्यात येते की, उपरोक्त संदर्भित पत्रान्वये केंद्र शासनाने यवतमाळ वन विभाग कार्य आयोजनेस सन २०२३-२४ ते २०३२-३३ पर्यंत नमूद पत्रातील अट क्र. १ ते २७ या अटीचे अधीन राहून मान्यता प्रदान केलेली आहे. सोबत संदर्भित पत्राची छायांकीत प्रत सहपत्रित करण्यात येत आहे.

२.० मान्यता पत्रास केंद्र शासनाने उपस्थित केलेल्या मुद्द्यांची पूर्तता कार्य आयोजना खंड १ व २ मध्ये करण्यात येवून पूर्तता अहवाल केंद्र शासनास सादर करण्याच्या दृष्टीने या कार्यालयास दिनांक १५ मार्च २०२५ पर्यंत सादर करावा.

३.० तथापी संदर्भित पत्रात नमूद केलेल्या अटीच्या अधीन राहून दिलेल्या निर्देशाप्रमाणे सदर कार्य आयोजनेस तातडीने अंमलात आणावी.

सहपत्र – वरिलप्रमाणे.

(विवेक खांडेकर)

प्रधान मुख्य वनसंरक्षक
(उत्पादन व व्यवस्थापन), महाराष्ट्र राज्य

प्रतिलिपी – प्रधान मुख्य वनसंरक्षक (वन बल प्रमुख), म.रा. यांना माहितीकरीता सादर.
प्रतिलिपी – वनसंरक्षक (प्रादेशिक), यवतमाळ यांना सहपत्रासह माहितीकरीता अग्रेषित.
प्रतिलिपी – वनसंरक्षक (कार्य आयोजना), पुर्व नागपूर यांना माहितीकरीता अग्रेषित.
प्रतिलिपी – उपवनसंरक्षक(प्रादेशिक), यवतमाळ यांना माहितीकरीता अग्रेषित.



भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FORESTS & CLIMATE CHANGE
Regional Office, Ground Floor, East Wing,
New Secretariat Building Civil Lines, Nagpur - 440001.
apccfcetral-ngo-mef@gov.in



F. No.: 12-55/98(FOR) / 14046

Date: 27.02.2025

To,

The Secretary (Forests),
Revenue and Forest Department,
Government of Maharashtra, Mantralaya, Mumbai-400032.

Subject: Approval of Working Plan of Yavatmal Forest Division for the period 2023-24 to 2032-33- regarding.

Sir,

I am directed to refer to the PCCF (P&M), Maharashtra office letter No. Desk-14/WP/ACF/189/24-25 dated 10.06.2024 regarding the requirement of prior approval from the Central Government under the VSSA, 1980.

In this regard, the Detailed Working Plan Report (DWPR) of the Yavatmal Forest Division has been examined by the Regional Office in accordance with the relevant provisions of the VSSA, 1980, along with the associated Rules, Guidelines, and the National Working Plan Code. Upon careful scrutiny of the DWPR, the Central Government hereby grants approval for the said Working Plan for the period 2023-24 to 2032-33, under the powers conferred by the VSSA, 1980, subject to the following conditions:

1. The activities carried out during the period 2023-24 shall be incorporated as a working scheme for the relevant year in the final copy of the working plan;
2. Details of number of proposals approved under VSSA, 1980 and details of the Compensatory Afforestation carried out in lieu of diverted forest area in the division shall be annexed in the final copy;
3. The Status of notification of non-forest area received for compensatory afforestation in RF/PF shall be compiled and annexed;
4. The orders of Hon'ble Supreme Court in the matter of Godavarman Thirumulkpad Vs Union of India in W.P. (Civil) No. 202/95 and related interlocutory applications shall be strictly adhered to. Any prescription or operation at variance with the Hon'ble Supreme Court's order shall be kept in abeyance till the order is in force or otherwise modified.
5. Further, in compliance with order to Hon'ble Supreme Court's Order dated 22.09.2000, the Government of Maharashtra shall ensure that regeneration of forests is commensurate with felling carried out under this Working Plan.
6. No felling shall be carried out without allocating necessary fund for implementation of regeneration operation to make regeneration commensurate with felling. In the events of failure in regeneration or any shortfall in carrying out regeneration operation, no further felling shall be undertaken until the failure/ shortfall is made up.
7. As per the directions issued by MoEF&CC vide letter dated 23.02.2018.

[Signature]

Regional Offices of MoEF&CC are authorized to decide the extent of harvesting that could be permitted under approved Working Plans for ensuring regeneration to be commensurate with felling. Instruction/ directions of the Central Government that may be issued in future in this regard shall be strictly complied with. Felling is to be done by State Government only after seeking permission from Regional Empowered Committee (REC), RO, Nagpur.

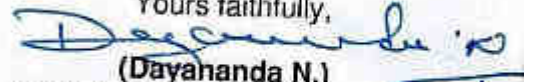
8. Fruits bearing naturally grown trees shall not be clear felled for any purpose whatsoever.
9. Prescriptions of micro plans for JFM (if made) should not deviate from the broad framework/guidelines of the Working Plan and shall be in accordance with various orders of Hon'ble Supreme Court.
10. No deviations shall be made from the prescriptions of Working Plan without prior approval of the Central Government under VSSA, 1980. However, deviations of positive nature i.e. voluntary plantations carried out outside the working area under any project, schemes and compensatory afforestation shall be approved by the competent authority as per the provisos of working plan code.
11. The exploitable girth of tree species and period of felling cycle shall not be lower than what was approved in previous working plan.
12. In the vicinity of Nalas and water bodies felling shall not be undertaken. Further felling shall not be undertaken near the known resting/nesting places of wild animals and birds.
13. No commercial felling shall be carried out along the 2 km strip of all perennial Rivers of State; further, no commercial felling shall be carried out along the strip of 500 meters of all seasonal Rivers; only eco-restoration work shall be carried out.
14. Volume details of all kinds of fellings viz; dead and diseased trees, grants of right and concession and all illicit felling should be compiled along with the estimation of their standing volumes as per the same volume table used for the assessment of growing stock. This report shall be prepared annually working-circle and compartment wise by the territorial Sub- DFO and shall be submitted to the CF, Working Plan for this purpose within 02 months of the end of control year. Such removal shall be accounted vis-a-vis prescribed felling yield of the relevant year.
15. To ensure sustainable management of Non-Timber Forest Produce (NTFP), scientific assessment of estimated quantity has to be done before their removal as per the prescription of Working Plan. Proper mechanism has to be in place for the collection of NTFPs in sustainable manner.
16. Status of rare, endangered and near extinct species shall be monitored closely, and adequate measures will be taken for their protection and conservation.
17. Execution of Working Plan shall be in conformity with the National Forest Policies, 1988.
18. No regularization of existing encroachment should be done without following due procedure, and an appendix may be added giving details of the encroachment of the forest area in the division. A definite plan has to be made to remove encroachment and vacated area shall be planted with suitable local species as per Government of India and Hon'ble Supreme Court Orders/Guidelines in the matter.
19. Eco-tourism shall/may be undertaken on a sustainable basis. No permanent structures shall be allowed at such sites. Temporary structures made up of

Dyamanthi

- local forest produce may be allowed for the public. Such sites will be declared as Plastic Free Zones. These ecotourism sites will be managed by the forest department as per the prescriptions of the working plan and after taking prior approval of Central Government under Section-2 of VSSA, 1980.
20. Gregarious flowering of bamboo, if any, must be reported to ICFRE and other institutes as mandated and the situation be dealt with standard protocol.
 21. Proper mechanism has to be put in place to control illegal felling, grazing and fire. Proper fire management plan shall be prepared and executed meticulously.
 22. Lac cultivation, if any, will be practiced as per the provisions of VSSA, 1980.
 23. While managing forests, provisions of the Biological Diversity Act, 2002 and Wildlife Protection Act, 1972 shall be fully complied.
 24. Annual Plan of Operations under Compensatory Afforestation Fund Act, 2016 and Compensatory Afforestation Fund Rules, 2018 shall be in conformity with Working Plan prescriptions.
 25. All the Unclassed Forest, acquired CA areas and acquired Private Forests should be notified as RF/ PF in time-bound manner at the earliest.
 26. Midterm review of Working Plan shall be undertaken after five years to review the compliance of conditions as laid down in this approval. Modification/addition in some conditions may be made to meet the objectives, with the approval of Regional Office, Nagpur.
 27. The Central Government reserves the right to review, modify, withdraw, this approval at any time if any of the conditions of approval are not implemented. Relevant modifications in the working plan are required to be carried out to keep it in conformity with the orders, circulars and guidelines issued by the Central Government or the Apex Court under Forest (Conservation) Act, 1980 or any other statute and National Forest Policy from time to time.

This is issued with the approval of Competent Authority, Regional Office (WCZ), MoEF&CC, Nagpur.

Yours faithfully,


(Dayananda N.)
Technical Officer (Gr.-II) 27/02/25

Copy to:

1. The Additional Director General of Forests (FC) Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Jor Bagh, New Delhi-110003.
2. The Principal Chief Conservator of Forests (HoFF) Govt. of Maharashtra, Van Bhawan, Ramgiri Road, Civil Lines, Nagpur-440001,
3. Guard File.


(Dayananda N.)
Technical Officer (Gr.-II) 27/02/25

GOVERNMENT OF MAHARASHTRA

OFFICE OF THE DY. CONSERVATOR OF FORESTS, WORKING PLAN, YAVATMAL

VAN BHAVAN, 1ST FLOOR, SBI CHOWK, CHURCH ROAD, YAVATMAL
Email - cfwp.yvt@gmail.com. Tele no.07232- 244289

Sub:- Working Plan of Yavatmal Forest
Division, Maharashtra for the period 2023-24
to 2032- 33- Regarding compliance
No./DCF/WP/YTL/372/2024-25
Yavatmal, Dated 04/03/2025

To,
Conservator of Forest,
Working Plan- East,
Nagpur.

Ref:- 1..Ministry of environment forest & climate Change Regional office Nagpur F.No
WP-85/RON/2023-NGP/14040 Date 27.02.2025
2. The Principle chief conservator of Forest (Production & Management) Maharashtra
State, Nagpur-1/Desk No-14/Acf/286 Date.28.02.2025

With reference to the subject cited above, the point wise complianccs of Yavatmal
division Working Plan Volume-I & II are as follows.

Sr. No.	Issues raised	Compliance
i.	The activities carried out during the period 2023-24 shall be incorporated as a working scheme for the relevant year in the final copy of the working plan.	Compliance has been done. Working scheme for the period 2023-24 incorporated in final copy.
ii.	Details of number of proposals approved under VSSA, 1980 and details of the Compensatory Afforestation carried out in lieu of diverted forest area in the division shall be annexed in the final copy	Compliance has been done. Volume II, Part I Appendix V page no.65 & 66
iii.	The Status of notification of non-forest area received for compensatory afforestation in RF/PF shall be complied and annexed	Compliance has been done. Volume II, Part I Appendix III page no.47 to 61

As per above compliance done in the final copy of Yavatmal Working Plan.

Attachment : Final copy of yavatmal Working Plan.

(Dhananjay , IFS)
Dy. Conservator of Forest
Working Plan Division,
Yavatmal

Copy To :

- 1.The Principle chief conservator of Forest (Production & Management) Maharashtra State, Van Bhawan, Ramgiri Road, Civil Lines, Nagpur - 440001
- 2.The Conservator of forest Yavatmal (T), Yavatmal Circle, Vanbhawan , Church Road Yavatmal-445001
- 3.Deputy Conservator of forest (T), Yavatmal Forest Division, Ramgiri Road - 445001

18. QR CODES FOR VARIOUS APPENDICES



List of Flora



List of Fauna



Maps



Appendix-I, Pg.1



Appendix-I(A), Pg.25



Appendix-I(B), Pg.27



Appendix-III, Pg.No.47



App-V, Pg.No.65



App-VI, Pg.No.67



App-VII (A), Pg.68



App-VII (B), Pg.74



App-VII ©, Pg.No.77



App-VIII, Pg.No.79



App-IX, Pg.No.86



App-X (B), Pg.No.94



App-XI, Pg.No.103



App-XII (A), Pg.No.69



App-XII (B), Pg.No.69



App-XIII, Pg.No.175



App-XIV, Pg.191



App-XVI (A), Pg.196



App-XVI (B), Pg.203



App-XVI (C), Pg.205



Appendix-XVIII, Pg.210



Appendix-XX, Pg.215



App-XXI, Pg.230



App-XXII (A), Pg.231



App-XXII (B), Pg.236



App-XXIII (A), Pg.243



App-XXIII(B), Pg.246



App-XXIV (A), Pg.249



App-XXIV(B), Pg.255



App-XXV (A), Pg.260



App-XXV (B), Pg.263



App-XXVII, Pg.271



App-XXVIII, Pg.279



App-XXXI, Pg.282



App-XXXII, Pg.321



App-XXXV, Pg.603



App-XXXVI, Pg.614



App-XXXVII, Pg.616



App-XXXVIII, Pg.620



App-XXXIX, Pg.625



App-XLVII (A), Pg.643



App-XLVII (B), Pg.653



App-XLIX, Pg.661