MANUAL FOR THE PREPARATION OF WORKING PLAN UNDER NATIONAL WORKING PLAN CODE 2023

Unit 5

WRITING OF THE WORKING PLAN

5.1 Writing of PWPR:

The PWPR forms the basis for providing inputs to the WPO to initiate the process of revision of the WP. The head of WP wing shall initiate the process by asking the Officer in charge of the concerned territorial forest circle to prepare the PWPR in the prescribed format. The PWPR is a review of the implementation of the WP with a brief comment on various prescriptions of the WP under review. The relevant information from Social Forestry, Wildlife and other wings of forest department shall provide inputs for the writing of the PWPR. The PWPR will include any studies to be undertaken by the WPO and suggestions to the WPO. The PWPR shall include all relevant information on the management of the forests as annexure. An indicative list of annexures and maps to be provided are also given below.

PWPR Format

I Basic facts

Forest Division	
Period of current working plan	
Period of proposed working plan	
Previous working plan periods (All the previous plans)	
Reference to the approval of the current working plan	

II A Division area statement

Sl No	Name of the range	Forest area (Ha)	Remarks

II B Forest Area statement

Sl. No.	Range	Forest Block/Name of the forest	Legal status of forest	Area (Ha) as per the plan under review	Area (Ha) in the proposed plan	Diff in area (Ha)	Reasons, if there is any difference

III Details of working circle and implementation of working plan under revision (Current Working Plan)

Sl No	Name of the working circle	Area (Ha)

IV Critical analysis of the prescriptions of the working plan under revision (One table for each WC)

Sl No	Name of the working circle	Details of prescriptions	Qualitative assessment on the implementation of the prescriptions (Good/Satisfactory/Poor)	Quantitative assessment	Comments
		(One row per prescription)			

V Important strategies suggested based on the analysis of prescriptions of the WP under review

(List the suggestions)

VI Suggestion for changes in the existing prescriptions with reasons

Sl No	Prescription in the plan under review (with para number)	Proposed changes	Reason

VII Any special study or survey to be taken up by the WPO (Not more than 250 words)

VIII Any other suggestion to the WPO (Not more than 250 words)

IX Annexures

i. Statement on change in the category of Forest Cover

ii. Statement on the forest land diverted under FCA 1980 for non-forestry purposes

iii. Statement on forest land where rights are recognised under FRA, 2006

iv. Statement on ToF

v. Statement on forest land under encroachment

vi. Statement on forest land with clearly demarcated boundary

vii. Statement on forest affected by jhum cultivation/mining etc (Wherever applicable)

viii. Statement on the CA area afforested against the forest land diverted and the balance area pending

ix. Statement on the areas taken up for plantation/afforestation during the plan period under review

x. Details of adjoining PAs under WLPA, eco-sensitive zones/areas, CZR, BHS, Ramsar cites. Etc with notification

xi. Details of any species recovery programme undertaken

xii. Statement on the incidence of forest fire for the last 10 years

xiii. Statement on the incidence of grazing

xiv. Details of soil and moisture conservation work undertaken during the last 10 years

xv. Statement on the recorded removal of forest produce from the forests (Timber/firewood/grasses/fodder/NTFPs/Bamboos)

xvi. List of wood-based industries and furniture units operational in the Forest Division

xvii. Statement on employment generated in mandays

xviii. List of acts/rules/regulations governing forest, wildlife and biodiversity

xix. Details of JFMC/VSS registered in the forest division

xx. Details of BMCs established in the forest division

xxi. Statement on forest/wildlife offence during the last 10 years

xxii. Statement on expenditure (Plan/Non-plan/CAMPA/CSS/EAP etc) of the forest division for the last 10 years

xxiii. Statement on staff position including vacancy details

xxiv. List of applicable labour laws

xxv. Details of awareness and capacity building programmes organised by the Forest Division

xxvi. Details of buildings in the forest division including check posts, watch towers etc

xxvii. Details of vehicles and other communication facilities available

xxviii. Details of research plots, seed orchards, seed stands/seed production areas, permanent preservation plots etc

xxix. Compiled Compartment History Forms

xxx. GIS Layers on forest cover, forest types, forest fire, wetlands, land diverted under FCA, rights recognised under FRA, forest plantations etc

5.2 Writing of Working Plan:

The working plan under NWPC is written in the standard format prescribed herein. The WP is written in two parts. Part I of the plan forms the basis for the proposals that are provided for the management of the forests in the second part. A detailed analysis of different parameters, their change over a period of time and its reflection on the status of the forest crop and impact on the forest management are to be brought out clearly which must lead to make clear management decisions. The Part II deals with the future management prescribed including the objects of management. Besides these two parts, a set of appendices are also appended with the WP document.

Format of the Working Plan (To be written by WPO)

The standard working plan headings are reproduced in the table given below:

Executive summary along with a brief outline of management prescriptions.	
a. Glossary of terms b. List of flora c. List of fauna d. Other life forms	
Part I Summary of facts on which proposals are made	
Chapter 1	Tract dealt with
Chapter 2	Extent and Condition of Forests and tree cover
Chapter 3	Maintenance and enhancement of forest health and vitality
Chapter 4	Maintenance, Conservation and enhancement of forest biodiversity
Chapter 5	Conservation and maintenance of soil and water resources
Chapter 6	Maintenance and enhancement of forest resource productivity
Chapter 7	Optimisation of forest resource utilisation
Chapter 8	Benefits to local people
Chapter 9	Policy, legal and institutional framework
Chapter 10	Past system of management
Chapter 11	Statistics of growth and yield

Part II Future Management	
Chapter 1	**Basis of proposals** a. Objective of management b. Method of treatment to be adopted c. Constitution of working circles d. Period of working plan and necessity for intermediate revision
Chapter 2 – N	Exclusive/territorial Working Circles (The total area of these working circles should be equal to the total forest area of the division)
Chapter N1 - Nn	Overlapping Working Circles
Chapter Nn+1	General financial forecast and financial plan of operation
Chapter Nn+2	Miscellaneous regulations Petty felling and extraction Rights and concession
Chapter Nn+3	Science and research Preservation plots Sample plots Regeneration plots NTFP Plots Other research and experiment plots
Chapter Nn+4	Summary of prescriptions
Chapter Nn+5	Trees outside forests (ToF)
Appendices (Indicative)	I) Divisional area statement II A) Enumeration and its results II B) Biodiversity assessment II C) Regeneration survey II D) Socio-economic survey II E) NTFP Survey III) Research plots IV) Rights and concession V) Lease of land VI) FCA land diversions, Status of afforestation of CA land and their notification VII) Range, block and beat (with area and HQ) VIII) Buildings IX) Divisional Forest Officers

	X) JFMC/BMC XI) Fire incidences XII) Forest Offences (Range/Compt wise) XIII A) Statement of individual/community rights given under FRA XIII B) Statement on community forest resources rights given under FRA XIII C) Statement on forest lands diverted under Section 3(2) of the FRA XIV) Statement on the WBI in the division XV) List of forest blocks/reserve forest with notification – register of reserves XVI) Register of boundary pillars XVII) Statement on the free grants given to the beneficiaries
Maps (List of indicative maps)	a. Administration map b. Drainage map c. Map of recorded forest/ forest blocks d. Stock maps e. Forest cover map f. Forest types g. Map on forest plantations h. Research plots i. Fire incidence and vulnerability j. Grazing incidence and vulnerability k. Incidence of illegal felling and vulnerability l. Areas infested with invasive alien species m. Forest encroachment n. Incidence of pests and diseases o. Maps of forest area where individual/community rights given under FRA p. Maps of community forest rights given under FRA q. Map of forest area diverted under Section 3(2) of FRA r. Maps of forest area diverted under FCA s. Map of eco-sensitive zone t. Map of waterbodies within the forest area

5.2.1 Part I: Summary of facts on which the proposals are based

The standard headings and the details to be covered in each of the chapters are given below:

Executive Summary:

It should also include
a) Vision statement,
b) Goals & Objectives of Management
c) SWOT analysis for prescription of strategies for achieving the goals and objectives.
d) Expected outcome

Chapter 1 Tract dealt with:

Extent and Condition of Forests and tree cover: Forest boundaries in India are legally defined and activities to be done within the forests are regulated. The diversion of forests for non-forest use is governed by the Forest Conservation Act 1980. The increase in forest cover is primarily achieved in India through the trees outside the forests. The changes in the legal status and the extent of forest area reflect whether the forest tree cover is maintained or increased or reduced. An analysis of the change in extent and the status of the forests are indicators on the extent and condition of forest and tree cover in the forest division as described below:

PART- I Summary of facts on which proposals are made		
1	**The Tract Dealt with**	
1.1	Name and situation	Name of the division and its geographical location, demographic and administrative details. (Details regarding ranges, beats, their headquarters and area; list of rest houses, other forest building, forest roads, fire lines etc. are to be provided in the appendix).
1.2	Configuration of the ground	It may be categorized as flat, gently rolling, hilly, very hilly, undulating foothills, gullied including description of slope, aspect etc.
1.3	Geology, rock and soil	Describe the geological and rock formation, soil types in particular along with Geological Survey of India (GSI) references. As far as possible, GIS maps may be provided**.**
1.4	Climatic Parameters	Data on rainfall and temperature: yearly and month-wise maximum, minimum, and average temperature for a few representative stations; this information can be obtained from Meteorological Department. Relevant GIS maps along with historical data may be provided**.**

Chapter 2 **Extent and Condition of Forests and tree cover:**

Forest boundaries in India are legally defined and activities to be done within the forests are regulated. The diversion of forests for non-forest use is governed by the Forest (Conservation) Act 1980. The increase in forest cover is primarily achieved in India through the trees outside the forests. The changes in the legal status and the extent of forest area reflect whether the forest tree cover is maintained or increased or reduced. The change in extent and the status of forest has a bearing on the quality of the forest and its management which is indicated below:

2.2.1 Area of forests under different legal status (Reserved Forests/Protected Forests/Village Forests/Unclassed and any other forests): Forests in India are legally classified as reserved forest, protected forests, village forests and unclassed forests under IFA 1927 with State specific amendments and State specific Forest Acts and the orders of Hon'ble SC dated 12-12-1996 in

the case titled T.N. Godavarman Thirumalpad Vs Union of India and others. The WPO shall analyze the different categories of forests and their change in extent since the last revision of the working plan. The details of forests where the final notification is issued and where the settlement is under process shall also be indicated. The list of forests with their notification details shall be appended in the annexures in the prescribed format. Any increase or decrease in area of forests must be analysed and probable reasons indicated.

2.2.2 Area of different forest types: Forest type is a unit of vegetation which possesses characteristics in physiognomy and structure sufficiently pronounced to permit the differentiation from other such units. Description of natural forests into distinct forest types and their extent provide scientific basis for their management. The assessment in the change in the extent overtime is a reflection of alteration in productivity, and status of the forest crop which will assist in the choice of silvicultural principles to be followed for the suitable management practices.

2.2.3 Change in the category of forest cover: The FSI categorises the forest cover based on canopy density into very dense, moderately dense, open and scrub. Change in forest cover over a period of time reflects the actual changes of forest on ground. The positive changes could be, among other things, attributed to better forest protection and related conservation measures whereas negative changes could be attributed to change of land use on account of developmental projects, excessive degradation due to anthropogenic pressures, harvesting of short rotation crop etc.

***2.2.4 Area of different working circles*:** The forest is divided into different management zones as working circles based on the object of management. The working circles indicate the application of different set of silvicultural prescriptions and management practices in that area. A change in the area of working circle is often a reflection of change in the object of management and/or change in the status of vegetation.

2.2.5 Area of the Trees Outside Forests: ToF contributes significantly to increase in the forest and tree cover of a forest division. Periodic monitoring of the change in area of ToF reflects the overall change in the forest and tree cover of the forest division.

2.2.6 Details of area of forests diverted under FCA: Forest lands diverted for non-forestry purposes under FCA impacts the extent and the integrity of forests besides the quality of the forests. Linear projects sometimes have greater impact by fragmentation of the forests. Hydro-electric projects and large-scale mining projects also have major impact on the extent of forests. The details of area diverted under FCA shall be appended as Annexure in the prescribed format. The details of plantations raised under Compensatory Afforestation shall be appended at Annexure to the WP document. An analysis of the compliance of the conditions laid down in the orders and implementation of mitigation measures are important to determine the impact.

2.2.7 Details of forest land where rights are given under the FRA: The FRA recognises specified forest rights in favour of forest dwelling scheduled tribes and other traditional forest dwellers and their communities. The nature and extent of individual forest rights recognised under FRA, the nature and extent/quantum of forest resources on which the community forest rights have been recognised and the management practices prevalent to be indicated. The details of the forest area where the rights are recognized is appended in the annexures.

2.2.8 Details of forest land under encroachments: Forest encroachment often leads to change in land use and has an impact on the integrity of the forest estate and the condition of the forests. Encroachments could also lead to honeycombing of the forest leading to habitat fragmentation and affecting the condition of forests. The change in area of encroachment and eviction gives an

indication of the protection measures taken up by the division and its impact on the extent of forest cover. The list of encroachment in the forest division shall be compiled and appended as annexure.

2.2.9 Details of any other factors affecting the existence of forests such as shifting cultivation, illegal mining etc: There could be other factors affecting the extent of forests like jhum cultivation, mining etc. The WPO shall compile these information in the following format and an analysis of the same shall indicate the reasons for the reduction in the extent of the forest and tree cover, if any, in the forest division during this period.

2.2.10 Demarcation of boundaries: Area of forests with clear demarcation of boundary with boundary pillars, trenches and other measures enables protection of forest areas and analysis of all the measures taken up for protection of forest areas. The details of the boundary pillars, trenches and other such measures are to be given in Appendix**.** The WPO shall also prioritise the areas prone for encroachment based on the information on encroachments and attempt to encroachment in the forest division and propose erection of BPs in the appropriate chapter in Part II.

Chapter 3. Maintenance, Conservation and enhancement of forest biodiversity

The forests offer diverse habitats for plants, animals and microorganisms. Forest biodiversity encompasses not only the trees but also the multitude of plants, animals and microorganisms that inhabits the forest ecosystem and their genetic diversity. Higher the diversity, more stable the ecosystem and it offers better livelihood opportunities to the local peoples and tribals who are dependent on the forests. At the same time, loss of biodiversity makes it difficult for the ecosystem to recover from disturbances and adversely affecting the forest dependent communities. Different approaches are adopted in India for biodiversity conservation such as area-based conservation measures by establishing protected areas, species recovery programmes of threatened species and in-situ and ex-situ conservation programmes etc. These are indicated by the following:

2.3.1 ***Adjoining Protected Areas***: Details of adjoining protected areas under Wildlife Protection Act, 1972 (National Parks/Wildlife Sanctuaries/Conservation Reserves and Community Reserves), Environment Protection Act, 1986 (Eco-sensitive zones/areas, Coastal Zone Regulation, Wetlands notified under Wetland Rules) Biological Diversity Act 2002. The management of these areas which adjoins the forests has an impact on the management of the forests. The WPO will analyse whether the forest division acts as a buffer or a corridor for wildlife in the adjoining protected areas.

2.3.2 ***Species diversity***: Diversity indices such as Shannon-Wiener Diversity Index, Simpson Diversity Index and Importance Value Index indicate the abundance and richness of species in a locality. Evaluation of these indices in light of the management prescriptions provides insight into management options. Biodiversity richness could be a proxy for the productivity of a forest ecosystem.

2.3.3 ***Details of any species-specific conservation programmes***: The presence of endemic, endangered species and actions taken up for their conservation, the progress and their impact. The WPO shall list the species specific conservation programme under implementation and will harmonise the objective of these schemes with the overall management prescriptions of the relevant working circles.

2.3.4 ***Details of species prone for over exploitation***: Some species are more vulnerable to over exploitation than others especially those who have a narrow ecological niche, and those

produce a smaller number of their individuals. Identification of such species and their distribution and extent provide insight into need for management interventions. The WPO may prioritise certain species based on the part used, purposes for which used and the quantum to take up necessary management interventions. For example, species whose underground parts, bark or whole plant is used have a higher threat than species whose leaf or fruit is used. Similarly, if a species has more than one use or used for treating more than one disease, then the utility of the species increases and thus needs a focussed conservation effort.

2.3.5 Details of unique/special habitats and high conservation value areas: Identification and mapping of these ecosystem forms basis for special management interventions, if any. The maintenance of the integrity of these ecosystems is essential for the long-term ecological security and conservation of the species dependent on these ecosystems. The WPO shall recognise their importance and prescribe such measures as deemed necessary for their conservation in the relevant working circle.

2.3.6 Details of diverse ecosystems such as grasslands, wetlands, mangroves, deserts etc: Identification and mapping of these ecosystem forms basis for special management interventions, if any. Identification of these ecosystems and their change in extent or quality over time will indicate the management interventions required. A map may also be prepared indicating different ecosystems on GIS.

2.3.7 Details of threats and challenges to vulnerable flora and fauna: Habitat fragmentation, illegal trade are serious threats that affect the population of flora and fauna. An analysis of various threats will help in formulating mitigation strategies. The WPO shall make necessary prescriptions to mitigate the threats and to aid the conservation of these species.

Chapter 4 Maintenance and Enhancement of Forest Health and Vitality

Natural forests are affected by various anthropogenic factors such as grazing, encroachment, forest fire, invasive alien species etc. Forests are also affected by natural phenomenon like flood, landslides, windstorms, pests and diseases etc. Presence or absence of regeneration is a better indicator on the health of a forest ecosystem. If the forest is poor or inadequate in regeneration, then it indicates that the health of the forest is poor and compels the manager to take immediate action to obtain the regeneration by appropriate silvicultural interventions and by removing the factors that inhibit the regeneration and their establishment. Forest vitality is the ability of the forest ecosystem to survive external disturbances and unfavourable conditions. A forest ecosystem that has low vitality has a limited capability to recover from any unfavourable condition or natural disturbance. Low vitality is normally caused due to repeated disturbances with little time to recuperate and it must draw the attention of the manager to take immediate steps to remove or mitigate the impacts of those disturbances. There are various factors that influence the forest health and its vitality as indicated below:

2.4.1 Status of regeneration of the principal species and its associates: The status of forest regeneration is estimated during the field survey. The regeneration status could be adequate, moderate or poor. In case the regeneration is inadequate or nil, then the factors that inhibit regeneration must be analysed and brought out clearly to enable suitable silvicultural/management interventions.

2.4.2 Details of areas affected by forest fire: Forest fire is one of the agents that has a direct impact on the regeneration and vitality of the forest ecosystem. Uncontrolled fire has a deleterious effect on the regeneration. Repeated fire impacts the capacity of the forest to recover from its impact on the ecosystem and thus reduces the vitality of the ecosystem. Fire frequency mapping and preparation of fire vulnerability maps help in effective forest fire management. The use of real time monitoring tools is potential mechanism for effective fire management.

2.4.3 Area affected by natural factors such as flood, landslides and windstorms etc: Documentation and assessment of all incidences of natural calamities and their impact on biodiversity and ecosystems will lead to the planning for disaster management. Potential negative impacts of natural hazards proportionate to scale, intensity and risk on infrastructure, forest resources and communities will lead to identification of proactive management activities to mitigate these impacts.

2.4.4 Area affected by and protected from grazing: Uncontrolled livestock grazing in forest areas is detrimental to forest health and ecosystem vitality. It is one of the most critical factors degrading the forest ecosystem. It affects the forest crop composition and adversely impacts natural regeneration, causes soil compaction and consequently diminishes the infiltration capacity of the soil. Ascertaining the livestock population from secondary sources like Animal Husbandry departments and determination of carrying capacity for grazing in forest areas based on the availability of palatable species shall provide inputs to the Working Plan Officer (WPO) for prescribing regulation of grazing. This data could also be obtained from the socio-economic survey. A grazing vulnerability may also be assessed and prescriptions included to mitigate the negative impact of grazing on regeneration and the quality of forests and on biodiversity conservation.

2.4.5 Area infested with invasive alien species: Invasive alien species is a major threat to the forest ecosystem vitality and its health in terms of biodiversity. They affect the regeneration and also impact the growth of the native species. Effective steps taken for the control of invasive species positively impacts the natural regeneration of native species in forest areas. The area infested with invasives and their severity to be recorded here. The WPO shall prescribe effective management of the invasive alien species in light of the object of management.

2.4.6 Details of incidence of pest and diseases: Pest and diseases affect the health and vitality of a forest ecosystem. Mapping of the extent of area affected and the frequency of such events will be useful for effective management. Adaptation of suitable silvicultural practices, use of healthy planting material, reducing the injury to the forest crop is some means to prevent incidence of disease in a forest crop. An analysis of the incidences of pest and diseases and the adaptation of different preventive measures will lead to better understanding of drivers of degradation leading to effective management prescriptions.

2.4.7 Forest degradation due to pollution: Incidence and extent of forest degradation due to pollution (soil, water, and in some cases air), and the mitigation measures.

2.4.8 Other drivers of forest degradation: There are other drivers of forest degradation and deforestation and barriers to reforestation. Identification of these with inputs from stakeholders will be useful for identifying better management prescriptions.

Chapter 5 Conservation and Management of Soil and Water Resources

Forests continually interact with water through canopy interceptions and storage, evapotranspiration and infiltration. Sub-soil moisture is affected by the infiltration and transpiration under the forests. The forest management prescriptions and the external impact on the forest such as excessive grazing and the resultant compaction of the forest floor also affect the infiltration rate and the water yield. The soil and moisture availability in turn also directly impact the productivity of a forest. Forest and water are mutually dependent. The water yield from a forested ecosystem directly depends on the various vegetative parameters like species, canopy density, fire history, grazing and silvicultural interventions like logging, thinning, weeding, pruning etc. However, there is a trade-off between water quality and quantity from any forested watershed. Thus the different water and soil conservation measures, the silvicultural practices adopted and other external factors have varied impact on the forested ecosystem which can be analysed as indicated below:

2.5.1 ***Inventory of water bodies and sources***: The waterbodies inside the forests improve the water regime of a forested watershed. Over exploitation of the ground water resources results in declining ground water levels; there is an urgent need to augment the ground water resources through suitable management interventions. Mapping of all water resources in the forests including springs shall form the basis for conservation and management of soil and water resources.

2.5.2 ***Area treated under soil and water conservation measures***: The soil and water conservation measures reduce the surface flow and aid in infiltration and also reduce the soil erosion. However, soil and water conservation structures needs to take into account total rainfall in the catchment. The Soil and Water conservation structures are highly recommended in high rainfall areas, however the same has to be very carefully and judiciously incorporated in low rainfall zones as it may adversely affect the water availability in downstream areas.

2.5.3 ***Monitoring of ground water***: Periodical recording of water level in open wells during dry and wet seasons to determine the ground water level. It will help in the assessment of the impact of interventions taken in the catchment on the groundwater. This information may be sourced as a secondary data from Central Ground Water Commission/Central Ground Water Board reports.

2.5.4 ***Identification of areas vulnerable for erosion and prescription for suitable treatment***: Identifying areas vulnerable for erosion and planting of local grasses in such areas are very effective for immediate control of soil erosion. It may be followed by tree plantation which takes time to establish. Forest soils must be kept as healthy and fertile as possible while maintaining the hydrological services.

2.5.5 ***Mapping of riparian zones for special management prescriptions***: Riparian zones act as discharge zones and with appropriate vegetation helps in lowering of water temperature, better dissolved oxygen, less turbidity and maintenance of channel shape. In areas with low rainfall, riverine plantations are likely to have a negative impact on the stream flow. Therefore, riverine plantation should be rainfall specific.

2.5.6 ***Monitoring of streams, lakes, wetlands, ponds and other waterbodies in forested catchments***: Eco-restoration, natural regeneration, tree/shrub/grass planting, soil and water conservation structures as per locally suitable designs protect streams, lakes, wetlands, ponds and other water bodies and sea shores. The important forested catchments need to be equipped with the monitoring stations over selected streams to assess the discharge and silt load. The data shall help in developing a long term understanding on the impact of various vegetative parameters and the management practices on the stream discharge and silt load.

Chapter 6. Maintenance and Enhancement of Forest Resource Productivity

The plants capture solar energy through the process of photosynthesis and convert Carbon dioxide to sugar and release oxygen. The net primary productivity (NPP) is the total energy accumulated by the plants during photosynthesis. The NPP of the forests in the tropical area which receive more sun light throughout the year is higher in comparison to temperate and alpine zones. Thus NPP of a forest is an indicator of how much it can produce in terms of timber, fodder, grass, Non-timber Forest Produce etc. The productivity of all these can't be maximised simultaneously for a patch of forest at a given point of time and there is a trade-off involved depending on the object of management. The estimation of growing stock of timber is not the complete reflection of the productivity of a forest. Some forests by their open nature such as dry deciduous forests have low timber volume in terms of growing stock but compensate it by higher grass yield. This productivity is impacted by anthropogenic factors which leads to degradation of the forest especially loss of top soil. By adapting appropriate silvicultural practices and mitigating the effects of the degradation, the productivity of forests can be maintained and even enhanced. Emphasis on plantation with improved quality of planting material aimed at improved productivity is essential to meet the societal needs of timber. The productivity of forests depends on the species composition, growing stock, increment and distribution of dia-class/age-class. Information on growing stock and its growth is necessary for efficient planning and management of the forests. The forest inventory, survey and mapping provide this important input. An assessment and the analysis as described in Unit 4 of the following parameters indicate the status of the forests and the management interventions required:

2.6.1 ***Estimation of growing stock****:* Growing stock is the standing volume of a forest crop. Higher the growing stock more the standing volume i.e usable timber and thus higher carbon stock as well.

2.6.2 ***Estimation of current annual increment and mean annual increment of the forest crop***: Increment is the increase in volume of growing stock over a period of time. Higher increment of Growing Stock also means higher carbon sequestration.

2.6.3 ***Estimation of Diameter distribution*****:** The diameter is a proxy for age and the diameter distribution of the principal species, and their associates indicate the presence or absence of different age class in a forest crop using n-D curve.

2.6.4 ***Estimation of Basal Area (BA) and the number of stems per unit area****:* Basal area is a function of crop diameter and number of trees per unit area. Basal area along with the number of stems per unit area is a better indicator of a forest crop to sustainably provide the goods and services it renders.

2.6.5 ***Estimation of Carbon stock of the forests*****:** An estimate of the carbon stock of the forests over a period of time indicates the carbon sequestration potential of the forests thereby the mitigation potential of the forests against climate change. The estimation of Carbon stock is determined by the summation of the 5 pools. The SFDs may do the estimation of all the pools for which field forms are provided (Forms 7, 8 and 9). Alternatively, the WPO may use the data from the ISFR reports by FSI.

2.6.6 ***Area for eco-restoration, rehabilitation and reclamation****:* The degradation of the forest leads to lower productivity. Analysis of measures taken up for mitigating the effects of the degradation, mining and shifting cultivation etc, especially through eco-restoration, rehabilitation and reclamation will be useful for estimation of area available for eco-restoration, rehabilitation and reclamation effective management of forests, duly supported by GIS layer wherever possible.

2.6.7 ***Area for improved productivity through afforestation***: The productivity of a forest depends upon the genetic material of the trees also. It is difficult to manipulate the

genetic makeup of a natural forests but can be done while raising plantation. The superior quality planting material is essential for increasing the productivity. An analysis of the plantation of superior quality saplings taken up and the identification of areas for such additional plantations and appropriate measures will indicate the efforts for improving the productivity of the forests.

2.6.8 ***Area taken up for tending operation and other operations****:* The timber, bamboo and NTFP productivity can be enhanced with suitable silvicultural treatments like thinning, cleaning, and pruning. Assessment of other silviculture practices undertaken to protect water resources and soils, reduce disturbance and damage to habitats, ecosystems, landscape and environmental values. Areas taken up for these operations indicate the efforts taken up for enhancing the productivity of the forests.

Chapter 7. Optimization of Forest Resource Utilization

Forests provide multiple goods for the use of the society in the form of timber, fodder, grass, fruits, nuts, gums, resin, tendu leaves, medicinal plants etc. The knowledge of the communities on the conservation, harvesting/collection practices, grading and storage helps in sustainable management of forest resources. Identification of the important forest produce, their demand and sustainable supply and the harvesting pattern will form basis for making sound management prescriptions as indicated below:

2.7.1 ***Agriculture customs and requirement of the local people:*** An estimation of the requirement of the local people for small timber for agricultural purposes on the basis of the socio-economic survey will indicate the dependence of the population on forests.

2.7.2 ***Listing of important NTFPs***: It is expedient to identify, produce, or enable the productions of diversified products such as NTFPs, their use, part used, based on the range of resources without jeopardizing the flow of ecosystem services in order to strengthen and diversify the local economy proportionate to the scale and intensity of management activities. This information may also be compiled from the socio-economic survey conducted.

2.7.3 ***Details of non-destructive/sustainable harvesting of resources****:* Bio resources are harvested and whole plants or different parts are used. If whole plants, underground plant parts or bark are used, this often leads to the death of the plant and is likely to have an adverse effect on its population than a plant whose leaf or seed or flower is used. An analysis of the part used, collection and harvesting practices shall indicate the sustainability of NTFPs. The WPO may refer to any specific study undertaken and the results on the non-destructive/sustainable harvesting of resources besides the inputs from the socio-economic survey.

2.7.4 ***Demand and supply of timber and NTFPs***: The socio-economic study and the local market survey will provide an assessment of the dependence of the local people on the forests for timber, firewood, fodder and other NTFPs. This will also include the estimation of import and export of timber/NTFPs from other States and Countries. This will enable the assessment of per capita consumption of timber and firewood by the people living near the forests. This information can be partly compiled from the socio-economic survey conducted. Other secondary sources on the market supply and demand may also be referred.

2.7.5 ***Low impact harvesting***: Assessment of low impact harvesting techniques being followed in the forest division. Harvesting and extraction of forest resources are undertaken in the manner so that merchantable waste is reduced, and damage to other products and services is avoided.

2.7.6 ***Recorded removal of timber, firewood, grasses, fodder, bamboos, other NTFPs***: Analysis of annual removal over a period of time indicates the sustainability of a species. The socio-economic survey also provides information on the use of the NTFPs by the communities. An analysis of the recorded removal and the use of timber, firewood, grasses, fodder, bamboos, other NTFPs from SE survey shall form basis for making appropriate interventions. Any reduction or excess extraction over the sustainable yield/average extraction during a period of time warrants immediate action for its rehabilitation or augmentation of natural population.

2.7.7 ***Valuation of the forest resources***: An estimation of the value of all the goods that are extracted from the forests based on the market value gives an insight about the contribution of forest resources to local/national economy and for making decisions for the optimisation of the use of the goods from the forests.

2.7.8 ***Forest enterprises***: Wood based industries and other industries that use raw materials sourced from the forests are important stakeholders for the management of forests. Listing of forest based industries and enterprises in the forest division and outside forest division which source raw material especially NTFPs from the division, not only indicate the forest based employment generation but also the contribution of the forests towards the local economy and indicates scope for new forest based enterprises. The WPO may consult the State Biodiversity Board on the use of the bio-resources by enterprises outside the forest division.

2.7.9 ***Access and Benefit sharing***: NTFPs are sourced from the forest areas for commercial use by the industry. Proper documentation of traded quantity and sharing of the benefits with the BMCs as per the provisions of BD Act and ABS guidelines notified thereunder can help in the conservation and sustainable use of NTFPs.

Chapter 8. Benefits to local people

The social and cultural values of forests aside from their ecological and economic benefits and optimization of forests and their products are intrinsically connected with local stakeholders. Traditionally, they form a significant part of the life of the local people with many patches of forests across the country protected as sacred groves. Several floral and faunal species of religious and cultural significance also exist. Hence, such cultural and social sentiments are of great importance in acting as motivational drivers behind their conservation ethos. The assessment of the role of forests on the social, cultural, economic and ecological aspects of the local people will provide inputs for making management decisions as indicated below:

2.8.1 ***Details of employment generated***: The activities of the forest department generate livelihood and an analysis of the same provides insight into the employment generation potential of the forest sector and the dependence of the local community on forests for employment. The details of trainings and capacity building programmes organised towards employment generation helps in identifying the potential human resource available for different activities including guides for ecotourism related activities.

2.8.2 ***Use of traditional Knowledge and listing of knowledge holders:***The local vaids/hakeems and practitioners of indigenous medicinal system are repositories of traditional knowledge who have a close linkage with the forests. This information may also be available in the Peoples' Biodiversity Register prepared by the Biodiversity

Management Committees. Their knowledge on the distribution of the species, their extent, its diverse use and availability etc shall form the basis for making sound management prescriptions.

2.8.3 ***Extent of sacred groves***: Sacred groves are great repositories of biodiversity with religious, cultural and conservation significance. They may also provide insight into good management practices. Listing of these groves shall provide insight into necessary special management interventions required. This list may include trees, forest patch, ponds/lakes etc.

2.8.4 ***Details of social customs on forests and forestry practices*:** There are community specific social customs, customary laws on various forestry related activities like collection of NTFPs, their use etc. Identification of the same indicates the close cultural linkage of the communities with the forests which could contribute to making culturally conscious management prescriptions with the active participation of the local communities.

2.8.5 ***Ecotourism sites and activities***: Ecotourism is responsible travel to natural areas for conserving the environment, sustaining the well-being of the local people, and involving interpretation and education especially to the visitor. Education is meant to be inclusive of both staff and visitor. Areas inside and adjoining designated forests, which have ecotourism potential to be identified and documented for effective implementation of ecotourism. Listing of the capacity building programmes undertaken for the staff and the community and identification of gaps if any for further training in future.

2.8.6 ***Identification of rights and concessions of the local communities:*** The communities living near the forest enjoy rights and concessions from the forests. Documentation of these rights and concessions including that of the migratory graziers, their extent, nature, etc., has a direct link with the management of forests.

2.8.7 ***Valuation of ecosystem services***: The WPO shall use the results of valuation of ecosystem services study undertaken by the state or any other institution. In the absence of any specific study, the valuation done at para 7.7 may form the basis for initial evaluation.

Chapter 9. Policy, Legal and Institutional Framework

National and State policies on forests, wildlife, water and environment governs the way forests are managed. The Indian Forest Act, 1927, the Forest Conservation Act, 1980, Wildlife (Protection) Act 1972, Environment (Protection) Act, 1986, Biological Diversity Act, 2002, Compensatory Afforestation Fund Act, 2016 and any other state specific law and rules made thereunder provide legal framework for the conservation and sustainable management of forests, wildlife and the biodiversity that the forests harbours. The Forest Rights Act 2006 and PESA Act also impact the management of the forests in India. An analysis of these legal instruments and their implementation, various institutions involved with the forest management and research will indicate the impact of these instruments on forest management as indicated below:

2.9.1 ***Listing of legal instruments governing the forest management***: This includes state/ locality specific rules, regulations on tree preservation etc

2.9.2 ***Role of panchayats or any local body in the district and council areas in forest management***: Analysis of the village development plan and its focus on forests, wildlife and environment.

2.9.3 ***Participatory forest management*****:** The listing of the committees constituted for the participatory forest management are mandated to protect and conserve the forests and the biodiversity thereof. Micro-plans are prepared in congruence with working plan prescriptions. Analysis of the functioning of these committees and implementation of the micro-plans prepared through Participatory Rural Appraisal is an indication of the participation of the stakeholders in forest management for sustainable management of forests.

2.9.4 ***Details of BMCs*****:** BMCs are constituted under the BD Act for the purpose of promoting conservation, sustainable use and documentation of biological diversity including preservation of habitats, and chronicling of knowledge relating to biological diversity. The ABS Guidelines further specifies the process for Access and Benefit sharing of bio-resources. Listing of BMCs, benefit sharing agreements, if any, data on the quantity of traded bioresources especially NTFPs indicates the benefits derived by the communities from the forest resources.

2.9.5 ***Forest, biodiversity and wildlife related offences*****:** Listing of year wise offences and details of conviction, if any, indicates the effectiveness of enforcement of law.

2.9.6 ***Financial outlay*****:**: Assessment of expenditure in the forest division on establishment and on developmental activities under different schemes indicates the budgetary support.

2.9.7 ***Human Resource***: Adequate and trained man power is essential for effective management of forests. Assessment on the vacancy of personnel against the sanctioned strength, percentage of women officials, requirement of additional human resources, if any, status of mandatory training of the staff as per the relevant State rules governing the same, details of in-service training programme organised etc.

2.9.8 ***Gender aspects***: Women are involved in forest-based income generation activities as they are the primary collectors of NTFPs and their primary processing. The women are likely to have knowledge on forestry resources linked with food, health, fodder and firewood. However, their commensurate roles do not reflect in the forest management. Mapping of gender-based roles and activities in forestry, assessing the contribution of the women in forestry activities, their role in forest management planning, training and capacity building for women organised by the forest department etc are essential to understand gender mainstreaming in forest management.

2.9.9 ***Labour welfare***: The welfare of the labours involved in forestry operations is of utmost importance. Listing of the different laws governing the labour welfare and analysis of adherence to the same indicate efforts taken for labour welfare.

2.9.10 ***Environmental awareness and education***: Assessment of all efforts made to increase public awareness and education on forests, the benefits provided by the forests, along with list of the published material.

2.9.11 ***Infrastructure support***: Adequate infrastructure in terms of office, residential accommodation of the staff, transportation and communication facilities are necessary for effective forest management. Listing of the entire infrastructure available enables identification of gap, if any, and planning for reducing the gap.

2.9.12 ***Research and development***: Research and academic institutes are important stakeholders. Research plots, preservation plots, seed orchards, seed stands/seed production areas etc established by forest department and research institutes are research infrastructures for forest management. Documentation of the efforts of the forest department for the production of quality planting material and focus on native endemic and threatened species, the details of research undertaken, application of results in the field and further identification of problems for research are essential for effective science-based forest management.

2.9.13 ***Existence of monitoring mechanism***: Monitoring and evaluation are essential tools for effective and adaptive forest management. Analysis of adherence to monitoring protocols like control forms, compartment history etc gives insight into the management of forests.

Chapter 10 Past System of management

In this chapter, a detailed comment and analysis of the results of the past management for each working circle are presented separately. Success or failure and reasons thereof, if known, are taken note of, the impact of the past working plan and the extent of harvesting are reviewed. In this chapter on "Past Systems of Management", critical analysis of deviations /failures in the implementation of the past prescriptions is given in detail. As far as possible, attempt should be made to quantify the results and effects of the past prescriptions.

Chapter 11 Statistics of growth and yield

WPO has to assess the availability of volume/ yield tables for the main timber species, which have been prescribed for felling in the various working circles for calculation of yield. If such tables are not available, then the possibility of stem and stump analysis for such species may be examined and implemented, if possible, for preparation of local volume table. In case, this is also not feasible, then non-destructive method for preparation of local volume may be adopted. Help of research institutes may be undertaken, if necessary. Site quality wise local volume table must be developed and applied. The WPOs are encouraged to refer to the species volume equations developed by FSI to estimate the volume of trees.

5.2 Part II Future Management Discussed and Prescribed: This part deals with the framing of general objects of management based on past practices, inputs received from the stakeholders, condition of the forest crop; constitution of working circles for different objects of management; supplementary prescriptions; financial forecast etc.

Chapter 1 Basis for proposals:

This chapter includes general objects of management, constitution of working circles to meet the different objectives, period of working plan etc. While drafting the general objects of management, the WPO must consider the PWPR, stakeholder consultation, national forest policy, policies of the States etc. The condition of the forest crop and its response to earlier management as discussed in the past history of management will also aid the WPO in drafting

the general objects of management. These shall form the basis for making management prescriptions under different working circles.

After framing the general objects of management, the forest zonation is done for different treatments to meet different objectives. Some of these are constituted under exclusive working circles and others are done through overlapping working circles.

Chapter 2 to 'n' – Name of the working Circle: (CHAPTERS ON (TERITORIAL/EXCLUSIVE/ MGT OBJECTIVE) WC)

The total area (Forest Estate) for which the WP is being prepared must be divided into different zones (Working Circles) based on the objects of management of forests. This may include WC constituted primarily for obtaining regeneration of the principal specie(s) and their associates, or for managing forests primarily for hydrological purposes or for managing forests primarily as wildlife habitat or for rehabilitation of degraded forests etc. The total area of these different zones (WC) must be equal to the total estate area. (Area under overlapping working circles should not be considered for this purpose)

2.1 ***General constitution of working circle***:

Mapping and summarization of working circle area statement by ranges, blocks, and compartments included in the working circle indicating gross area and showing forest type and density classes (as adopted by FSI). If there is any change in the area of a particular WC proposed, from the WP under revision, reasons for the same to be given in detail.

2.2 ***Special objectives of management***:

This flows from the general object of management for which this WC is proposed to be constituted. Those broad objectives must be divided into sub-points with management perspective. These are to be enlisted in order of priority. Whether the forest is being managed for maintaining healthy productive crop by ensuring regeneration felling or managed primarily for their ecological functions, should be clearly spelt out. The trade-offs in choosing a particular set of management objectives should also be described clearly.

2.3 ***Analysis of the crop:***

This is the most important part of the Chapter. Analysis will be done in three parts:

a) Analysis of existing crop: The existing crop must be analysed, for its structure (age/diameter class distribution (n-D curves)), growing stock, stocking of the principal species, status of regeneration, biodiversity status, carbon stock status, water regime in the WC area, assessment of NTFP bearing species, etc.
b) Comparison with past available data: A comparison with previous working plan data or from any other reliable sources such as report of the pre-investment survey and other such inventory of forest resources available at FSI website, and special features, if any, are to be described. Based on this comparison, the trend in the change in 1. forest crop (structure, growing stock, stocking etc.); 2. biodiversity status; 3. carbon stock status; 4. Water regime; also must be brought out. Reasons for the change also must be noted.
c) Desired forest crop: What is the desired forest crop to meet the objectives defined above must be brought out clearly here. If the present forest crop as analysed in para a is the desired forest crop according to the management objective, proposed prescriptions will be such that forest crop maintains its present form. This warrants silvicultural interventions simply for the reason that the forest crop keeps changing all the time as it is

a living system. (Forests are living systems and they keep changing slowly even though we may not be able to perceive those continuous changes)

2.4 Silvicultural system:

There are standard silviculture systems to adopt a kind of regeneration felling for maintaining healthy productive forest crop. But there is no standard silviculture system to adopt for maintaining sustainability of eco-system services from the forest. So when regeneration felling is proposed, reasons for choosing of a particular standard silviculture system along with defining the system must be presented. When no standard silviculture system is available to fulfil the object of management, silviculture principles which will be adopted to maintain/ generate a particular forest crop form in terms of structure, growing stock, stocking, regeneration etc. by modifying any of the standard existing silvicultural system or otherwise, the proposed treatments should be described in detail justifying the same.

2.5 ***Rotation period*** (For even aged system of management with regeneration felling):

If regeneration felling is a requirement as per the selection of Silvicultural System above, the growth and other data on which the rotation is based are to be discussed here. Adequate reasons shall also be given for adopting a particular rotation, other than that of the greatest volume production. In the context of climate change, for enhancing mitigation effects, carbon sequestration becomes one of the primary objectives of the management of forests. In such a case, to maintain a vigorously growing population a rotation that allows maximum volume production is to be adopted. If there is a change from the previous plan, then the possible effect on age class distribution must be analyzed.

(OR)

Harvestable diameters and Felling Cycle (For uneven-aged system of management with regeneration felling): Harvestable diameters- These are to be prescribed species wise according to their site quality and correspond to maximum volume/ growth production i.e., the average rate of growth or volume increment reaches a maximum. These would be different in case of technical rotation.

2.6.***Felling Cycle***- Wherever applicable, it is fixed and reasons given. In the diffused systems it generally corresponds to the period of the plan, i.e., 10 years. Longer the felling cycle, higher the intensity of felling. The WPO shall decide on the intensity of felling and the felling cycle as per the management objectives, type of crop and the condition of site etc.

2.7 Treatment cycle:

The treatments prescribed may include other silvicultural activities including those indicated under the subsidiary silvicultural operations. For such operations, the WPO shall indicate the period during which the entire forest would be covered. For example, management of invasive alien species or rehabilitation of degraded forests, the WPO shall determine the treatments and also indicate the number of years in which the entire WC shall be gone over. While deciding on this cycle, the requirement of the forests, availability of resources both financial and technical and other relevant parameters shall be considered by the WPO. This cycle shall ordinarily be less than the expected life of the principal species.

2.8 ***Determination of Increment:***

The increment put on by the crop must be determined using standard methodology. Adopting a particular method and its suitability in the instant case is reasoned here. While estimating the annual yield, the equi-productive area based on reducing factors on site quality and crop density is resorted to, wherever applicable.

If regeneration felling is proposed, the yield calculation method adopted for sustainable harvesting should be indicated. There must be provision for adjustment of extra ordinary felling against future yields to ensure vitality and regenerative capacity of the forests for enhanced carbon sequestration.

Where regeneration felling is not proposed, determination of annual increment must be done. Knowledge of increment is necessary to judge the best possible silviculture treatment.

2.9 ***Table of felling***: A tabular statement showing felling of trees, year-wise by ranges, blocks, compartments, and sub-compartments for each felling series.

2.10 ***Method of execution of felling***: These are guiding principles for felling of trees and are known as general marking rules. It should be simple to understand and implement.

2.11 ***Subsidiary silvicultural operations***: Good practice guide for silvicultural operations including thinning and its grades etc. should be given. The activities proposed could be:

a. Thinning and cleaning

b. ANR through sowing and planting: Methods of assisted natural regeneration based on status of natural regeneration may be prescribed. Keeping in view the objective of multiple use forestry a multitier canopy is encouraged while prescribing silvicultural and follow up cultural activities. Artificial Regeneration must be resorted to only after giving adequate opportunity for NR to come up.

c. Regulation of grazing

d. Regulation of rights of the local communities

e. Other cultural operations

f. Fire management

g. Riparian zone management

h. Soil and water conservation

i. Management of invasive alien species

2.12 ***Regeneration:*** Measures to be taken up to augment natural regeneration including aided natural regeneration, artificial regeneration etc are discussed here.

2.13 ***Associated regulations and measures***: May include any specific measure which is not captured anywhere else including the overlapping working circles be listed here.

Chapter -- : Working Circle: Constitution of overlapping WC based on the object of management – management of special habitats like wetlands; WL Corridors:

Overlapping working circles are constituted to meet specific objectives over forest areas that are primarily managed for certain other purposes as discussed in the earlier chapters. This is aimed at multiple use forest management. These working circles are also constituted for the management of understorey crop like bamboo and rattans, and other special habitats. As per the requirement of the crop and management objectives, the WPO is at liberty to constitute one or many of the overlapping working circles to prescribe management prescriptions which are in addition to the primary prescriptions given in the WC of the previous section.

It is suggested to keep the number of overlapping WC to an absolute minimum as per actual requirement. General prescriptions such as protection of forests against illicit felling, involvement of locals through the principles of JFM etc may be covered under the miscellaneous regulations.

There will be a separate chapter for each working circle. The numerical number shall continue sequentially after the territorial/exclusive WC. Special management interventions like management of lower canopy species like management of special habitats, management for ecotourism, general prescriptions for biodiversity conservation etc can be discussed here. This could also include management of CFR.

The general format given for the exclusive working circle in the above section must be followed while writing the overlapping WC. The general constitution of the WC, special objects of management, silvicultural system proposed (wherever applicable), the treatment cycle are to be covered. The WPO is advised to give specific treatments with clear timelines for easy understanding and better implementation in the field.

Chapter – General financial forecast and financial plan of operation:

The cost of implementation of the plan shall be worked out by the WPO based on the extant schedule of rates adopted in the State. For this the WPO, in consultation with the DFO, shall work out the cost of implementation for the prescriptions and compile the same for each of the working circles. WPO to consider the existing budgetary provisions and dovetailing from other schemes of the government/funds availability from any other source including externally aided projects, while making prescriptions.

The treatment cycle of various operations such as rehabilitation of degraded forests, raising of plantations, protection of forests, consolidation of forest boundaries, etc shall commensurate with the existing institutional support and the potential financial resources expected to the division. However, the regeneration operations in areas where regeneration felling has been executed must be taken up as per the prescriptions in the respective WC and financial forecast shall be estimated accordingly. WPO may identify additional financial sources as well for the implementation of the prescriptions of the WP.

Chapter -- Miscellaneous regulations: Petty Felling and extraction for research and training needs are discussed here. Removal on account of rights and concessions and special grants if any may be discussed in this chapter.

Chapter – Science and Research: The WPO may identify the gaps in research and indicate the same. The status of research sample plots, permanent preservation plots, regeneration plots, NTFP plots, seed orchards, seed stands etc, their management are to be discussed in this chapter.

Permanent Sample/Observational plots provide information which is essential to understand natural ecological processes. They provide direct insights into forest development. This information leads to the idea about how forests change over time and respond to various atrocities like climate change, biotic invasions, and land management.

Permanent plots are a robust approach for measuring detailed changes in the forest conditions, structure, species richness and diversity. Monitoring of such plots helps detecting significant change in vegetation. Further, since observational plots will be specially selected permanent plots, models of tree growth, mortality, forest yield can be developed on the basis of repeated measurements taken at a fixed interval of time. Along with these Permanent Observation Plots (POP) will also feed with data on amount of carbon soaked, carbon in dead trees. Being the long term field studies in the forest eco-system, these plots will also provide decay rate.

SFDs are encouraged to establish one Permanent Sample Plots (PSP) (with protection) and one POP (without protection) of one hectare each for every forest type. Objective of establishing permanent observational plots along with Forest Resource Assessment is to provide unbiased forest statistics of areas, growing stand and stock, changes in land-use, biodiversity status and dynamics, carbon stock estimation etc. In this context, uses of permanent plots may be defined as:

i. Models of forest dynamics can be developed.
ii. Measurement of diameter of individual tree at periodic interval will help in developing growth model, CAI and MAI.
iii. Morality/decay rate will also be assessed from these plots.
iv. As knowledge of basal area increment of a forest species is of paramount importance in forest management, annual basal area increment can produce forest yield.
v. Soil richness in micronutrients (iron, copper, zinc etc.) can be measured as forest dynamics variables. (being a important component of soil, it has not been touched by FSI so far)
vi. Carbon stored can be measured to estimate changes in stock contained in live biomass. Climate change/global warming being a global issue can be addressed by reporting the net estimation of carbon (removal as well as released carbon by forests).
vii. Factors showing damage (mechanical) due to pests/ diseases showing health of forests can be estimated.
viii. Since plots are maintained and data would be reliable which may support sound forest management.
ix. Invasive spp, spreading faster, can be monitored and be managed.
x. Lichens biodiversity or monitoring lichens communities as indicators of ecosystem functions (forest health, air quality, local climatic conditions, soil fertility etc.) can be studied.

Chapter – Organisation of the forest division: The WPO may propose the most suitable organisation structure for the implementation of the plan. The proposal should compare the existing and the proposed structure with adequate justification. This should be based on the analysis done in para 2.9.7 and the gaps identified thereof.

Chapter – Summary of prescription: The WPO shall prepare a brief resume of prescriptions and suggestions as per working circles. This helps for ready reference. It shall be in a tabular form for each of the working circle separately.

Name of the WC	**Prescription in brief**	**Ref para number in the WP document**

Chapter – Trees Outside Forests (ToF): This chapter **i**ncludes the present scenario of trees outside the forests in the division, potential areas for ToF and efforts required to increase TOF.

Annexures to be appended with the WP

I Divisional area statement

II A Enumeration and its results

II B Biodiversity assessment

II C Regeneration survey

II D Socio-economic survey

II D NTFP Survey

III Research plots

IV Rights and concession

V Lease of land

VI FCA land diversions

VII Range, block and beat (with area and HQ)

VIII Buildings

IX Divisional Forest Officers

X JFMC/BMC

XI Fire incidences

XII Forest Offences (Range/Compt wise)

XIII A Statement of individual/community rights given under FRA

XIII B Statement on community forest resources rights given under FRA

XIII C Statement on forest lands diverted under Section 3(2) of the FRA

XIV Statement on the WBI in the division

XV List of forest blocks/reserve forest with notification – register of reserves

XVI Register of boundary pillars

XVII Statement on the free grants given to the beneficiaries

XVIII Maps (List of indicative maps)

a. Administration map
b. Drainage map
c. Map of recorded forest/ forest blocks
d. Stock maps
e. Forest cover map

f. Forest types
g. Map on forest plantations
h. Research plots
i. Fire incidence and vulnerability
j. Grazing incidence and vulnerability
k. Incidence of illegal felling and vulnerability
l. Areas infested with invasive alien species
m. Forest encroachment
n. Incidence of pests and diseases
o. Maps of forest area where individual/community rights given under FRA
p. Maps of community forest rights given under FRA
q. Map of forest area diverted under Section 3(2) of FRA
r. Maps of forest area diverted under FCA
s. Map of eco-sensitive zone
t. Map of waterbodies within the forest area

MANUAL FOR THE PREPARATION OF WORKING PLAN UNDER NATIONAL WORKING PLAN CODE 2023

Unit 6

CONTROL OF THE EXECUTION OF THE WORKING PLAN

General prescriptions of the working plan should be written in such a way that it is quite clear as to what constitutes a performance norm and the Control forms provide for performance parameters/targets/ annotations/norms for all prescriptions/suggestions for every working circle to be monitored, assessed and reported on annual basis during the period of the working plan. Control forms should be prepared to include each of these prescriptions, as well as all definite suggestions regarding other operations left at the discretion of the territorial staff.

The WPO should prepare a draft set of control forms to control all the important operations prescribed and suggested in his working plan such as different types of felling, thinning, plantation works, subsidiary silvicultural operations, rotational lopping, soil and water conservation works, control grazing, fire protection, NTFP harvesting, bamboo harvesting, boundary pillars, spring recharge, lantana eradication, reducing degradation, removal of firewood etc., These forms will then be submitted to the CCF/APCCF (WP) for approval and preparation of final sets. There shall be separate set of control forms for each working circle. In this regard, help may be taken from suggested reporting formats for sustainable management of forests.

Three permanent sets of these control forms will be prepared in the office of the Working Plan Officer and one set each is distributed to CCF/APCCF (WP), head, territorial circle, and the DFO territorial.

The DFO territorial will annually make entries in his copy of the control forms and send them together with the deviation statement in triplicate to the Working Plan Officer through the Head, territorial circle. After the entries have been checked and approved, the WPO will first get his copy completed and then send the DFO's copy to the Head territorial circle. The later will then complete his copy and finally return the DFO's set for deposit in the latter's office till next year. The WPO will send four copies of deviation statement with appropriate justification to the PCCF (HoFF) for sanction. After the sanction, one copy each will be sent to the WPO; Head, territorial circle and the DFO territorial for their record and the CCF/ APCCF (WP) as the case may be, will retain the fourth copy for his set of control forms. The control forms should be submitted by the DFO territorial to the Head, territorial circle on or before December 1st and the latter should send them to the WPO concerned on or before January each year.

FORMATS OF CONTROL FORMS

a. **COUPE CONTROL FORM:** The format of coupe control form is as under

Working Circle- Periodic Block-		Felling- Series- Cutting- Section	Localities prescribed Localities suggested As carried out				COUPE CONTROL FORM Coupe No. Excess(+)or Deficit (-)		Page
Prescription in brief	W.P. para	Year due	Year	Block/ Compt.	Area	Volume	Area	Volume	Remarks & Sanction
1	2	3	4	5	6	7	8	9	10

b. FELLING CONTROL FORM: The format of felling control form is as under:

Working Circle- Periodic Block-		Felling Series- Cutting Section-		Localities prescribed Localities suggested (With Areas)				COUPE CONTROL FORM Coupe No.	Page
Range wise	Area	Species	Diameter class	Trees marked	Unit Factor	Volume marked	Trees retained	% Trees retained	Remarks
1	2	3	4	5	6	7	8	9	10

MANUAL FOR THE PREPARATION OF WORKING PLAN UNDER NATIONAL WORKING PLAN CODE 2023

Unit 7

APPROVAL OF THE PWPR AND THE WORKING PLAN

7.1 Approval of PWPR/WP by SCC

The Standing Consultative Committee (SCC) is constituted under the Chairmanship of PCCF (HoFF) for guidance, deliberation and finalization of PWPR and draft working plan of a forest division with the representation of the IRO, Chief Wildlife Warden (CWLW) and heads of other wings of the forest department including other line departments having roles in the forest landscape, concerned head of the territorial circle, DFO (T) and the WPO. The experts from FSI regional centres, ICFRE institutes, IIFM, representatives of the regional offices of BSI and ZSI may also be included as special invitees. The head of the working plan wing shall be the member secretary of this standing committee. The SCC shall meet atleast once in every three months on a determined date as per the mutually agreed calendar drawn by the PCCF (HoFF).

PCCF (HoFF) shall only chair the meeting. The head of the IRO or his duly authorised representative, preferably, an officer at the rank of IGF/DIGF/AIGF, shall attend the meetings of the SCC. The Quorum of the committee shall be 50% of the members. The proceedings of the meetings of the SCC shall be issued under the signature of the Chairman of the SCC. The procedure to be followed by the SCC while scrutinising the PWPR and draft WP document are given below:

a. Examination of the PWPR by the Standing Consultative Committee

1. The member secretary of the SCC shall convene the meeting of the Committee within 30 days of receiving the PWPR from the head of the territorial forest circle.
2. The head of the territorial circle shall present the PWPR before the committee
3. The SCC may suggest certain studies/survey or any observation to the WPO
4. The minutes of the meeting shall be finalised and circulated within 15 days of the meeting.

b. Examination of draft WP by the Standing Consultative Committee

1. SCC is the apex technical body to evaluate the draft WP. All the members including IRO are encouraged to flag all the technical matters in the SCC.
2. The member secretary shall convene the SCC within 45 days of receipt of the draft WP from the WPO with the approval of the Chairman, SCC.
3. If the SCC feels necessary, the meeting may be convened one more time to discuss the unresolved issues. The second meeting will be convened within 45 days of the first meeting.
4. The WPO shall present the salient feature of the draft WP, general and special objects of management and the gist of the stakeholder consultation before the SCC. In case there is a gap between the expiry of the previous WP and the present plan, then the WPO shall also present along with the draft WP, all the activities undertaken in the forest division that would fall within the prescriptions of different Working Circles of the earlier WP. He may also request the deemed extension of the earlier plan till the time the present plan is approved.
5. The SCC shall check whether the draft WP is prepared as per the approved PWPR. If there are some deviations from the PWPR, the WPO shall submit the reasons for the same before the SCC for its approval.

6. Examine the general object of management and special object of management for each of the WC that they are in consonance with the policy of the State and is in consonance with the societal need and finalise the same.

7. **Check the area statement**:

   i. The SCC shall compare the estate area given in the draft WP with the WP under revision. If there is any difference, it must be justified by the WPO. If not satisfied, during the meeting with the WPO, this must be resolved.
   ii. Total area of the estate should be divided into management zones (Working Circles) exclusively for specific object of management. (This will not include the area of overlapping WC).

8. **Examination of the objects of management to its conformity to the forest policy**: The SCC will examine the general objects of management and special objects of management to its conformity to the NFP and India's global commitment. If the SCC feels that there are any contraventions, then, this shall be discussed in the meeting with the head of the WP wing. The SCC may modify, amend or delete any object of management at the time of approval providing the reasons for doing so in writing.

   i. Is there any objective in the draft WP that contravenes the basic objective of the NFP?
   ii. Is there any objective violates or contravenes the essentials of the forest management given in the forest policy and in the NWPC?

9. Examine the organisational structure proposed and approve a suitable structure for the implementation of the plan considering the financial implications if any.
10. Financial forecast for the implementation of the plan: The SCC shall examine whether the financial forecast is prepared considering the current schedule of rates. They shall also check whether all the prescriptions are included in the forecast.
11. The SCC shall examine whether the public consultation has been convened and the suggestions considered by the WPO. If any of the suggestions are not considered by the WPO, the same should be brought out clearly.
12. Check whether the silvicultural principles prescribed are sound and will ensure meeting the desired management objectives.
13. Check and confirm that none of the prescriptions are in contravention of the NFP, Orders of Hon'ble SC on the matter etc.
14. Check the data computation and certify the correctness of the same while submitting to the IRO for approval.
15. Check the maps and confirm that they have been appended as per the NWPC 2023.
16. Check whether all the annexures as given in the NWPC 2023 are appended.
17. Ensuring that the draft is prepared as per the format prescribed in the NWPC 2023.
18. Wherever "deemed extension" of the expired WP is involved, enclose the details of activities undertaken by the SFD during the intervening period. No extension plan shall be prepared.

19. **Check list while sending the draft WP to IRO in PARIVESH for approval**:

    a. Certificate to the effect that the inputs from PWPR has been duly considered and incorporated appropriately in the draft WP
    b. Certificate to the effect that the GS estimation and all computation have been checked and found right
    c. Certificate to the effect that the silvicultural prescriptions are appropriate to meet the management objectives
    d. Certificate to the effect that the objectives and the prescriptions are in consonance with the Policies of the State Govt.
    e. If there is change in area, justification for the same
    f. All appendices as per the NWPC included
    g. All maps prepared and checked
    h. Draft WP document

7.2 Approval of WP by IRO

The IRO is advised to raise all the technical matter before the SCC. SCC is the technical body to evaluate the WP document. On receipt of the draft WP along with the certificates from a State, the IRO shall examine the document for the points below. If there is any clarification required, the IRO shall call for a meeting with the head of the WP wing and the WPO.

1. **The observations of SCC are incorporated**: The IRO will check whether the observations of SCC are appropriately incorporated in the draft report. If not, the same to be done during the meeting with the head of WP wing. If the IRO is not satisfied with the reply with regards to the area of the plan, in principle approval may be conveyed with his observation on the variation in this aspect on the area of the plan for its correction. Prior approval shall be accorded after resolving the area difference.
2. **Examination of the processes involved while preparing the WP**: If the WP is not prepared by the officer as provided in the code, the draft WP is liable for rejection.

3. **Midterm review and extension**: The IRO on the recommendation of the SCC shall accord the extension of the existing plan upto two years. While according the extension, the IRO shall indicate that WPO shall be appointed within 45 days of the order of extension. If the extension is recommended for more than 2 years, then the same shall be sent to MoEF&CC for the period beyond two years.

4. **Deemed extension of expired WP**:

There are instances when there is a gap between the expiry of the earlier WP and the approval of the new WP. There is a lack of clarity how to treat the intervening period, it is therefore recommended that

    a. In case there is no felling of trees done during the intervening plan period, on the basis of the recommendation of the SCC, the IRO shall accord “Deemed Extension” of the previous plan till the date the new plan becomes effective.
    b. In case where felling of trees is continued as per the expired WP during the intervening period, the case may be placed before the Regional Empowered

Committee for examination. Based on the observations of the REC, "Deemed Extension" shall be accorded by the IRO.

5. Every approval for the WP shall be prospective for a period of 10 years from the date of approval.
6. There are number of forest divisions in which the WP are not operational. A status report on the same may be obtained from the States in a prescribed format below.

Status Report on the Working Plans as on …… (Date of approval/ implementation of the New WP Code-2023)

Name of the State / UT…….

Sl. No.	Name of the Territorial Division	1. Does the Division have an Approved working Plan (Yes/No) 2. If Yes, the Period of this WP	If there is no approved WP, mention the period of the last approved Working Plan	Has the exercise for New WP initiated	Status of PWPR (1) Not ready (2) Prepared (3) Approved (4) Shared with IRO	Status of New WP (1) Incomplete but exercise on (2) Draft ready (3) Draft submitted to IRO	Indicate the dates against column 6 (1) When likely to be completed (2) when likely to be submitted (3) when submitted	Remarks
	1	**2**	**3**	**4**	**5**	**6**	**7**	
1.								
2.								

Summary

Total Number of Divisions	No. of Divisions with approved WP	No. of Divisions without an approved WP	No. of Divisions where WP exercise is on going	No. of Divisions where WP exercise is not yet initiated	No. of Division with No working Plans ever	Remarks if any
1	**2**	**3 = (1-2)**	**4**	**5 = (3-4)**	**6**	

(Sign and seal of the officer heading the Working Plan Wing in the State/UT)

7. The States shall get the PWPR approved for all those divisions for which the WP have already expired, by 31st December, 2023.
8. The States may be encouraged to complete the WP process for all such divisions on priority. Considering the infrastructural and financial constraints, the States may be asked to complete the process by December 2025.
9. In the event that States fail to meet these above-mentioned deadlines, the Ministry may consider with-holding CSS funding w.e.f. 2025-26. Similarly, NPV component under CAMPA may also be not considered for utilisation in the forest divisions without approved WP beyond 2025-26.
10. There is a procedure to issue approval for annual felling by MoEF&CC through IROs. As annual fellings are part of the approved WP, the regular approval requirement for annual felling may be dispensed with.

11. For the forest division with forest area less than 1000 ha, management plans/working schemes may be prepared for a time period of 10 years.

12. Approval of the WP may be accorded in the following format.

Order (For prior approval of WP)

In exercise of power under clause c of Rule 10 of FCA Rules 2022, on the recommendations of the SCC vide reference – dated--, prior approval for the WP for – division for the period – to – is hereby accorded.

Signature of head of IRO

Copy to

1. PCCF (HoFF) concerned. A copy of the approved WP be submitted to this office within 30 days be email at – for record.
2. IGF, MoEFCC for information

Order (For in principle approval of WP)

In exercise of power under clause c of Rule 10 of FCA Rules 2022, on the recommendations of the SCC vide reference – dated--, in principle approval for the WP for – division for the period – to – is hereby accorded. The approval is subject to the following conditions:

1. ---
2. ---
3. ---
4. Nth

Signature of head of IRO

Copy to

1. PCCF (HoFF) concerned. A copy of the approved WP be submitted to this office within 30 days be email at – for record.
2. IGF, MoEFCC for information

Order (For extension of WP)

In exercise of power under clause c of Rule 10 of FCA Rules 2022, on the recommendations of the SCC constituted vide – dated--, extension is accorded to the WP for – division (from – to--) for 1 year /2 years i.e upto ----. This approval is subject to the following conditions: (Wherever necessary)

1. The WPO officer shall be nominated within 45 days of receipt of the approval for the revision of the WP. The approval shall be deemed to be withdrawn *ab initio*, if the WPO is not appointed within the stipulated time.
2. Nth

Copy to

1. PCCF (HoFF) concerned. A copy of the approved WP be submitted to this office within 30 days be email at – for record.
2. IGF, MoEFCC for information

Order (For deemed extension of WP)

In exercise of power under clause c of Rule 10 of FCA Rules 2022, on the recommendations of the SCC constituted vide – dated--, extension is accorded to the WP for – division (from – to--) i.e upto ----.

Copy to

1. PCCF (HoFF) concerned.
2. IGF, MoEF&CC for information

13. The pdf format of the working plan as approved by MoEF&CC shall be uploaded on the website of the concerned State Forest Department. This shall also be shared with the following offices:

a) IRO Concerned, MoEF&CC
b) PCCF (HoFF) offices of all States/UTs
c) ICFRE Institutes and centres
d) National forestry library and Information centre, FRI
e) Wildlife Institute of India (WII), Dehradun
f) National Tiger Conservation Authority (NTCA)
g) Forest Survey of India (FSI), Dehradun and its regional centre
h) Indian Institute of Forest Management (IIFM), Bhopal
i) Indira Gandhi National Forest Academy Library
J) Central Academies for State Forest Service
k) National/State Biodiversity Board

14. **Criteria for approval of Working Plan by IROs**

1. The Observations of SCC are duly incorporated in the draft WP.
2. Examine the Objects of management
   a. In conformity to National Forest Policy
   b. In conformity to India's global commitment
   c. Does not violate the orders of SC on the matter
3. Examine whether the processes involved while preparing the WP are adhered to.
4. Examine the Financial forecast for the implementation of the plan
5. Conformity to the NWPC with reference to the format.