

Environmental and Social Impact Assessment of Forest Management and Timber Extraction Activities



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A study of impacts of forestry management activities, conducted by U.P. Forest corporation and Uttar Pradesh Forest department, on the socio-environmental locale, they are conducted in, and their recommended mitigation measures.

Uttar Pradesh Forest
Corporation
21/475, Indira Nagar,
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ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT REPORT PHASE II

1. BACKGROUND

1.1 The FSC (Forest Stewardship Council) has certified the forest areas under the control of Uttar Pradesh Forest Department in the year of 2014. This certification by M/s GICIA (Green Initiatives Certification and Inspection Agency) was performed under the strict guidelines of 10 Principle and Criteria of FSC. The certification process was undertaken by the UP Forest Corporation after taking due permission of the Uttar Pradesh Forest Department. Initially the total area FSC Certified was in three regions of UPFC namely, Gorakhpur, Lakhimpur Kheri, and Meerut 4.18 lakh Hec. , encompassing the 13 forest divisions (Annexure 1) of UPFC. These forest divisions are covering the territorial forest areas mainly reserved, Protected and other territorial Forest under the control of Forest department of the respective forest divisions which was managed under the provisions of Indian Forest Act 1927 (as amended from time to time)

The Forest Stewardship Council (FSC) is an open member-led organization that sets standards for sustainable forest management and certifies forest area that function up to those standards of FSC (listed in annexure 2). In the year 2017, it was decided that the areas of the social forestry divisions covering the three regions mentioned above should also be certified as per the standards of FSC. These areas which were supposed to be certified in the social forestry decisions include mainly the roadside, canal side and rail-road side plantations done by the Uttar Pradesh Forest Department. These areas includes 14498 Hec of 38 Social Forest Divisions. So were added to the list of certified forest divisions, thereby increasing the total certified area from 3,49,296 Hec certified in 2015 to 4.18 lakh Hec in 2017. Now, at the time of compilation of this report, 51 forest divisions have been certified under the FSC-FM program. In which 13 forest

Divisions are territorial and 38 Divisions are Social Forestry divisions

2. OBJECTIVE AND SCOPE OF THE REPORT

2.1 Objective

The main objectives of this report are the review of the forestry management activities including harvesting and re-plantation in additional Social Forestry areas comprising of 14497 Hec. in the light of the sustainability principles of FSC Principles and Criteria.. This study is a mandatory requirement towards the second phase of FSC-FM certification of 38 Social forestry Divisions of Uttar Pradesh. This report is an addendum to the previously conducted Environment and Social Impact Assessment Study of 13 FSC-FM certified forest divisions, and should be read in conjugation with the same.

The list of Forest divisions, their areas and maps are enclosed as annexure number 1,2,3 respectively.

The report consists of the following components:

- i. The environmental impact assessment of the activities carried out in the forest by the Uttar Pradesh Forest Corporation with respect to plantation, felling, thinning, logging, transportation of trees.
- ii. The social impact assessment with respect to the above mentioned activities taking into consideration the notion that developmental activities have social consequences and it helps the policy makers in their goal of enhancing inclusion and helps in sustainable developmental models by minimizing adverse social impacts

2.2 Scope of the Study

- a. The scope of the study with respect to Environment Impact Assessment includes:
 - i. Assessment of environmental impacts - appropriate to the scale, intensity of forest management and the uniqueness of the affected resources. Assessments shall include landscape level considerations as well as the impacts of on-site processing facilities.
 - ii. Safeguards regarding protection of rare, threatened and endangered species and their habitats.
 - iii. Ecological functions and values:
 - iv. Forest regeneration and succession.
 - v. Genetic, species, and ecosystem diversity.
 - vi. Natural cycles that affect the productivity of the forest ecosystem.
 - vii. The consultative process
 - viii. Impact on natural regeneration
 - ix. Impact on water resources and fertility
 - x. Impacts of the extraction cum harvesting of timber and non-timber forest products
 - xi. Effect of any road construction and maintenance work in the forest
 - xii. Impact of planning activities
 - xiii. Impact of vehicle movement
 - xiv. A detail suggestion on all negative and positive impacts along with a plan to minimize these effects.

- b. The scope of the study with respect to Social Impact Assessment includes:
- i. Consultations maintained with people and groups (both men and women) directly affected by management operations.
 - ii. Identification of activities that may have an impact on neighboring communities, groups properties etc.
 - iii. Identifying the list of affected communities
 - iv. Stakeholder's consultations.
 - v. Consultation Mechanism: Participant Observation, Interviews, Questionnaires
 - vi. Effect of forestry operations – including nursery, planting maintenance and felling on local people.
 - vii. Effect on performance against social indicators like wealth levels, literacy, availability of income, available of consumer durables etc.
 - viii. Assessing impact on direct and indirect employment.
 - ix. Assessing impact on cultural and ceremonial sites.
 - x. Assessing impact on crime.
 - xi. Assessing impact on the quality of life of the people around the catchment area and the forest employees employed in the operations.
 - xii. Assessing the security arrangement for the workers involved in felling activities.
 - xiii. Assessing the infrastructural facilities available.

3. Methodology

It is pertinent to mention that Uttar Pradesh Forest Department manages and harvests its forests under the strict provisions of the Working Plan (WP), duly made by the Working Plan wing of the Uttar Pradesh Department of Forest and Wildlife and approved by the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India, New Delhi. These working plans are written for the management activities to be performed by the executive officers (Divisional Forest Officers, DFO) under the guidance of the working plan with due diligence. Any deviation from the provisions made in WP is to be approved by the Working Plan Division (Chief Conservator of Forest Working Plan) and sanction from the MoEFCC. These working Plans are written by WPO (Working Plan Officer, in the rank of Conservator of Forest) for a period of 10 years. Under the guidelines of MoEFCC Presently the National Working Plan Code for 2014 which is the revised version of earlier Working plan code 2004 , is applicable for formulating of WP by WPOs. This Working Plan Code 2014 encompasses the detailed guidelines, principles, methodologies for harvesting, plantations including environmental and social safeguards. The Working Plans of any forest divisions in the state whether Social Forestry or Territorial, is to be made compulsorily for Management of forest, harvesting, plantations. It would be clear after examination of working plan and the National Working Plan Code 2014 that the Principles and Criteria of FSC are core objectives of Working Plans.

So this study is made for EIA and SIA is based on the analysis of the national working plan code guidelines and the working plan prescriptions and synergy with the FSC principles and criteria. It is noteworthy to mention that the working plans are being written under the guidelines of NWPC 2014 and previous to that the NWPC 2004 is applicable. The analysis of working plan prescription under NWPC 2004 are analyzed for this study and to study the correlation with FSC standards

4. The Guiding Document for the Study: Divisional Working Plans

A Divisional Working Plan is designed especially for each forest division. The Working Plan (WP) is designed as per the prescribed norms of National Working Plan Code (NWPC), a guiding document issued by the MOEFCC. A special Working Plan Officer in the rank of conservator of Forest belonging to Indian Forest Service designated as the Working Plan Officer (WPO) of a particular division, and is provided an entire team of officers for assistance. The WPOs spend 2 years in gathering, researching, studying data from the division they are assigned to and the findings of their study, forest management etc stipulated in the National Working Plan Code 2004 and 2014. After due process the WPO prepares the draft of Working plan. This WP draft is then sent to the MOEFCC for approval and after the final approval are these WPs finally implemented in the Forest Divisions. The Forest Managers (DFOs) can only work in accordance with the prescriptions of the WP.

The NWPC 2014, and its preceding editions, state that conducting an environmental and socio-economical assessment, along with the impacts on the same by previously implemented working plans, are the base for formulating the Working Plan for next tenure. The working plan consists of two parts: Part I- Summary of Facts on which proposals are made and Part II- Future Management. The Part I comprises of the data and information about the current and past environmental and socio-economic condition of the Forest Division, as well as a study of the impacts on the environmental components as a result of the implementation of previous working plans, all the way back to the initial most stages of the working plans formulation which may go to even last 50 to 60 years

a. **The factors to be researched and compiled in Part I of WP, as per NWPC 2014**

are:

1. Detailed List of Flora Fauna including Algae, Lichens and others
2. Name of the division and its geographical location, demographic and administrative details. (Details regarding administrative units including ranges, beats, their headquarters and area; list of Forest department owned buildings , forest roads, fire lines, etc. are to be provided in the appendix).
3. Geology, rock and soil
4. Climatic Parameters: Data on rainfall and temperature: yearly and month-wise maximum, minimum, and average temperature for a few representative stations.
5. Area of forests under different legal classes (Reserved Forests, Protected Forests, Unclassed Forests and others)
6. A general note on the state of existing boundaries and boundary pillars especially on the status of demarcation and/or need for fresh demarcation may also be described. Locations of the boundary pillars should be shown on the map with latitude/longitude on village map or such other map of convenient scale.
7. Land use, land use change and forestry (LULUCF): It is to be described here that the base year status of land use and forest cover is maintained or improved. Summary of changes occurred during last plan period. List of area (range wise / beat wise) diverted under FCA, FRA and also mention non-forest land/degraded forest given for compensatory forestation under FCA, encroachments, etc.
8. Threats to the forest
9. Distribution of different forest types
10. Tree cover outside forest area
11. Shifting cultivation (Jhumming) if any

12. Based on the vegetation survey and forest inventory and compartment descriptions, a summary of important trees and other species found in the area with their floristic composition and condition (age class, health, and quality of the trees) is given. The effect of geology and soil; and climatic parameters (rainfall and temperature) on the distribution of forest types, specific composition (sub types), ecological relations; distribution of species; unique and specific vegetation etc..
13. Plant species diversity: Biodiversity assessment in terms of density, frequency, total basal cover, dominance, IVI, etc. Efforts should be made to make a base year documented species diversity status for future reference using GIS tools. Base year documented species diversity is maintained or enhanced under sustainable management of forests.
14. Status of biodiversity conservation in forests
15. Status of species prone to over exploitation
16. Details of current harvesting practices of forest produce and preparation as well as implementation of measures for conservation of biodiversity
17. Status of species prone to over exploitation: Details of current harvesting practices of forest produce and preparation as well as implementation of measures for conservation of biodiversity. The use of components of biological diversity in such manner and at such rate that does not lead to the long term decline of the biological diversity thereby maintaining its potential to meet the needs and aspirations of present and future generations, fair and equitable sharing of the benefits arising out of use of biological resources, knowledge and for matters connected therewith as provided in “Biological Diversity Act 2002” should be ensured.
18. Conservation of genetic Resources: Preservation plots, sample plots, medicinal plants conservation areas, community conservation areas, etc.; genetic diversity, with the help of research organizations, documented and monitored through research studies as far as possible especially for Non Timber Forest Produce (NTFPs) including MAPs.

19. Fauna and their habitats: Description of flagship wild species including mammals, birds, reptiles, amphibians, etc. along with their suitable habitats and micro habitats.
20. Threats and challenges to wildlife: Details regarding habitat fragmentation/ loss, illegal trade, road and rail networks, extended habitats in proximity to protected areas for rare and endangered species; man animal conflict.
21. Protection and management of fauna: Details of measures taken and its effect therein.
22. Status of regeneration: the data on population dynamics of seedlings, saplings and young trees to be collected to monitor the status periodically and find out the conditions in which a species regenerates best.
23. Area affected by forest fire
24. Area damaged by natural calamities
25. Number of livestock grazing in the forest, availability of palatable species and pasture land, etc. to assess the grazing pressure and potential, based on socio-economic survey and assessment. Vegetation survey should be taken into account for regulating grazing either by area or by number of livestock
26. Lopping practices Status of existing of lopping practices during fodder/NTFPs collection extent of damage to the affected species, if any; and period of lopping, etc. should be provided.
27. Area infested by invasive weed species in forests
28. Incidences of pest and diseases
29. Forest degradation and its drivers
30. Pollution control and protection of environment Incidences, extent of forest land degradation due to pollution (soil, water, in some cases air) and the measures taken to mitigate them.
31. Area treated under soil and water conservation measures: Soil erosion vulnerability assessment and intervention taken, along with map.

32. 2 Duration of water flow in the selected seasonal streams: Periodic monitoring of river flow pattern with reference to annual rainfall/duration of flow, to show the status of improvements, if any.
33. Details of aquifers to monitor their sustainability.
34. Trend detection in growing stock of wood with respect to the condition of fully stocked forest as per the site quality over the years and explanation thereof
35. Increment in volume of identified timber species
36. Efforts towards enhancement of forest productivity through quality plantation activities
37. Carbon Stock: Details of biomass for carbon stock assessment, based on the forest types and land use.
38. Carbon sequestration and mitigation
39. Recorded removal of timber Details of all removals of timber except for petty felling as per the control forms. Harvest should not exceed the accretion (growing stock)
40. Recorded removal of fuel wood: Information to be based on socio-economic survey and assessment. Evolving mechanism for quantified data on recorded removals and sharing with the community.
41. Recorded removal of locally important NTFPs: Assessment of demand and supply, sustainability and potentiality. NTFPs by all means should not exceed the annual yield or as indicated in the Working Plan.
42. Description of recorded removal for agricultural customs, local needs, market and marketable produce including that of forest development corporations and other agencies. Consumption of wood, by wood based industries and other end users. Assessment and evolving mechanism to meet the demand may be provided.
43. Number of JFM (Joint Forest Management) committees and area (s) protected by them. Aspects related to regular meetings at the community level and representation and

participation of members belonging to different categories in JFMCs and their role in functioning of the forest development.

44. Labor welfare: Details of welfare measures along with direct employment in forestry activities.
45. Use of indigenous knowledge: Documentation of the indigenous traditional knowledge and incorporation of the same in the micro-plans and other prescriptions of the plan.
46. Extent of cultural/ sacred groves: Details of cultural and sacred groves along with ownerships, status of management and interventions to conserve.
47. Prevalent social customs relevant to forests.
48. Status of compliance of Forest Right Act 2006
49. A brief account of other rights and concessions, their extent, nature, etc. which are to be regulated or met under working plan prescriptions.
50. Other aspects which are not mentioned above but are intrinsic to forests. For example the impact and the dependency of transhumant populations mostly the grazer communities which have not been well addressed in the working plan is required to be assessed. The season and area of grazing, migration route, transition camps, etc. need to be recorded and accounted for in the working plan.
51. Existing policy and legal framework and their compliance
52. The efforts to increase public awareness of the importance of and the benefits provided by forests and sustainable management of forest along with list of the published material such as brochures, pamphlets, leaflets, posters, etc.; meetings with the general public to inform them of the benefits provided by forests to society; details of forestry/environmental awareness and education programs conducted for students.
53. WPO has to describe the activities taken up under preceding Five-year plan, (plan wise and scheme wise) and make summary suggestions for future based on details of the

prescriptions provided in various chapters of the plan. Intersectoral (rural development, tribal welfare, etc.) contribution may also be taken into account.

54. The historical background from the beginning of management of forests
55. Past system of management and their results: The system of management which has been followed in the past will be briefly discussed, with a view to prevent repetition of such mistakes as might have been made and also to understand and appreciate the present condition of the crop
56. Summary and results of works such as fire-protection, improvement in communication, interface activities, amenities to staff, etc.
57. Past yield, revenue and expenditure
58. Statistics of growth and yield
59. Statistics of forest carbon stock

The above mentioned data and information is compiled by the WPO after thorough Social and Environmental Impact assessments and the recommendations are compiled in the succeeding parts of the WP.

b. The Part II*: of the WP, as per NWPC 2014:

It contains following nature of recommendations for future forestry management:

1. The basis of proposal is listed first which include sustainable management of forests with the objective to increase productivity of the forest ecosystem and maintain the vitality.
2. Method of treatment to be adopted: A brief account about the ecological and silvicultural requirements for sustainable management of different identified forests or crops keeping in view the stakeholder's requirements, aspects of biotic factors, legal status of forests, drivers of un-sustainability, etc
3. Constitution of working circles and detailed management practices to be adapted
4. Special objectives of management
5. Analysis of the crop

6. Silvicultural system
7. Rotation period for harvesting
8. Harvestable diameters
9. Reducing factors and reduced areas
10. Felling cycle
11. Calculation of the yield 0054
12. Table of felling
13. Method of executing the felling
14. Subsidiary silvicultural operations cleaning and thinning
15. Regeneration
16. Associated regulations and measures

*Detailed definition of these components are provided on pages 32-41 of NWPC 2014.

(Annexure 4)

5. Comparison of Divisional Working Plans and FSC Standards

PRINCIPLE 1:

The Organization shall comply with all applicable laws, regulations and nationally-ratified international treaties, conventions and agreements.

The working plan for each forest division is designed with adherence to all national and applicable international laws, conventions and agreements. Both UP Forest Department and UP Forest Corporation are managed by forest officials appointed and trained by the government of India to ensure implementation of National and applicable International laws. The working plans for forest divisions are made with the objective of ensuring implementation of Indian Forest Act, Wildlife (Protection) Act, Forest Conservation Act, Biological Diversity Act, PESA Act and Forest Rights Act.

PRINCIPLE 2:

The Organization shall maintain or enhance the social and economic wellbeing of workers.

Both UP Forest Corporation and UP Forest Department adhere to national labor laws pertaining to worker welfare and workplace safety. Upon interviewing local dwellers it was so discovered that most daily wage/ contractual workers are locally sourced and their remittance is done through e-payment, eradicating any chances of exploitation. Permanently employed workers are eligible for insurances, Employee provident fund, medical covers, paid leaves etc.

PRINCIPLE 3:

The Organization shall identify and uphold Indigenous Peoples' legal and customary rights of ownership, use and management of land, territories and resources affected by management activities.

One of the major objectives of forest management working plan is to employ Joint Forest Management. Joint Forest Management is sharing of responsibilities, authority and usufructs between the village community or the forest user group and the forest department on the basis of a memorandum of understanding (MoU) between the two. The management of the jointly managed forests is done through the provisions of a micro-plan prepared by the community on participatory rural appraisal (PRA) basis with the technical help of the officials of the forest department.

PRINCIPLE 4:

The Organization shall contribute to maintaining or enhancing the social and economic wellbeing of local communities.

The forest management working plan makes provision for Fringe Forest Management. In general, the forest fringe area is conspicuously different from the inner forest due to close contact with local communities. Although the dependence of forest fringe villages and their interaction with forest is almost same, but the kind of interaction and its severity may vary from one type of forest fringe to another. The communities living in the forest fringes depend heavily on the forest for their fuel wood and fodder needs. In rural households, fuel wood is used for cooking as well as for heating water and household heating, more so in the hilly regions. The dependence of villagers' is heavy because commercial sources of energy are not easily available due to varied reasons. Non-timber forest products (NTFPs), referred to, in the system of national

income accounts, as minor forest products are source of livelihood and food security for a large number of rural communities living in and around forests. They are important to rural households in terms of their contribution to health, food, energy and other aspects of rural welfare.

PRINCIPLE 5:

The Organization shall efficiently manage the range of multiple products and services of the Management Unit to maintain or enhance long term economic viability and the range of environmental and social benefits.

The national working plan code 104 and earlier quotes “have full mitigation measures for sustainable forest management keeping in view the demand of fuel wood timber and other forest produce. The working plans which are duly prescribed by the working plan wing and approved by the GoI under National Working Plan Code 2014, divide the forest area of a forest division into various operational units referred as working circles. The prescriptions for forestry operations provided in the working circle are based on the observations and study of earlier working plans operations/ management and the outcomes. The chapters of working plans include in detail the previous trails of the earlier working plans right from the very beginning of the forestry operations. The Working plans are thus compiled only after thorough Social and Environmental Assessment of previously implemented working plans, and its findings are inculcated into future working plans under working circles.

PRINCIPLE 6:

The Organization shall maintain, conserve and/or restore ecosystem services and environmental values of the Management Unit, and shall avoid, repair or mitigate negative environmental impacts.

Biodiversity conservation and development is one of the objectives of Forest Management Planning defined under the working plan code. It states '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 especially the lower forms of life (algae, fungi, lichens, epiphytes, parasites, etc) of a forest division must be made an ongoing programme with the support from State Bio-diversity Board.

PRINCIPLE 7:

The Organization shall have a management plan consistent with its policies and objectives and proportionate to scale, intensity and risks of its management activities. The management plan shall be implemented and kept up to date based on monitoring information in order to promote adaptive management. The associated planning and procedural documentation shall be sufficient to guide staff, inform affected stakeholders and interested stakeholders and to justify management decisions.

All forest divisions, social or reserved, are managed in accordance with the Forest Management Working Plan (WP) developed specifically to their sustainability needs. In addition to the guidelines issued in WP, various guidelines towards all aspects of management have been issued from competent level to provide clarity to forest managers.

PRINCIPLE 8:

The Organization shall demonstrate that, progress towards achieving the management objectives, the impacts of management activities and the condition of the Management Unit, are monitored and evaluated proportionate to the scale, intensity and risk of management activities, in order to implement adaptive management.

UPFC has an electronic MIS through which sale, production process is monitored. A monthly meeting at their Headquarter is conducted to monitor the progress of work and address any issues. The production and sales progress is gauged against a predefined monthly progress rate as provided in 'Van Nigam Sanhita'. Senior management conducts on site inspection to ensure the compliances and due diligence.

PRINCIPLE 9:

The Organization shall maintain and/or enhance the High Conservation Values in the Management Unit through applying the precautionary approach.

There are no High Conservation Value areas under the scope of this study because the areas selected are strip plantations along roads, canals and railway tracks.

PRINCIPLE 10:

Management activities conducted by or for The Organization for the Management Unit shall be selected and implemented consistent with The Organization's economic, environmental and social policies and objectives and in compliance with the Principles and Criteria collectively.

The management activities to be conducted by the Management Unit are clearly defined in the working plan. The working plan directs towards achieving UPFD's and UPFC social goals through Joint Forest management, Community Forest Management, and Fringe forest

Management; Environmental goals of the working plan include soil and water conservation, Bio-diversity management, water resources management, prevention of forest fires. Maintenance of forest health, study and prevention of any forest diseases, study of correlations between forests and climate change, and make use of the findings towards development of forest management policies; implementation of REDD+ (Reducing Emissions from Deforestation and Forest Degradation) and application of modern technologies like geomatics in forest management. The economic policies are designed to address requirements towards sustainability and protection of forest area. Sustainability, conservation of forest and wildlife, are the prime motivators towards development of working plan. The working circles are defined after carefully studying the environmental and social impacts of the previous working plans, the current socio-economic and environmental scenario, and future needs.

6. Socio-economic Situation and Dependence on Forests

a. Dependence on forests

As per the information sourced from local dwellers and forest officials, local population is dependent upon forests for various needs:

- Small timber for agricultural equipments
- Small timber for repair of bullock carts
- Maintenance of house
- Fencing of farms
- For Fuel wood
- Employment in forestry work done by Forest Corporation
- Employment from forestry works

b. Employment generation by Forest Department and Cooperation

Forest management work done by the UP Forest Corporation is one of the major sources of employment for the local population. The working period starts from October and lasts till March. During this duration the workers earn a sum of about 6 to 6.5 thousand rupees per month. Forestry activities carried out in the division provide employment to local population, especially landless poor farmers, in nurseries, plantation work, road / construction maintenance, grass mowing etc. example: detailed earning for each of these works is tabulated on page 99 of the Bijnore Social Forestry Division's Working Plan 2010-20

c. Demand and Supply of Fuel wood

Annual average fuel wood requirement per family has been estimated to be 1800 kg their are total 482852 families in the division. The annual estimated requirement of fuel wood in the division stands at 869134 metric ton. Approximately 20 % of this fuel wood requirement is fulfilled by the leftovers of harvested crops. Apart from this 60% of the urban families and 40% of the rural families have a LPG gas connection and their 70% requirement of fuel wood is fulfilled by it. Hence 35% of the fuel wood requirement is fulfilled by the forest.

7. Impacts and Mitigation of Forestry Activities

The probable Social and Environmental Impacts analyzed in the study area are listed in the following below and their mitigation measures are listed accordingly. It is pertinent to mention that the working plan of these forest divisions are in vogue as per the Govt of India guidelines and National Working Plan Codes 2004 which is the preceding guideline to NWPC 2014.

ENVIRONMENTAL IMPACTS		
Assessment of environmental impacts - appropriate to the scale, intensity of forest management and the uniqueness of the affected resources. Assessments shall include landscape level considerations as well as the impacts of on-site processing facilities.		
S.No.	Impact	Mitigation Measures as provided in Working Plans
1.	Soil Erosion	<ul style="list-style-type: none"> • Gully plugging, regulation of water flow, surface coverage of soil by tree planting, shrub planting and ground surface coverage by palatable and economically useful grasses including medicinal grasses and shrub plants. • Gully plugging by twigs and branches of the plants I.e. organic plants, mechanical bunds, stabilization of area which is susceptible to erosion. • Construction of snub brush dam, earthen dam, mason dam including Gabrel structure. • Construction of Spurts, walls etc. • Restriction of felling of trees including shrubs and restriction of removal of grasses up to the extent it doesn't expose surface soil. • Construction of trenches across the gradient to enhance soil mass or conservation
2.	Soil Nutrition Depletion	
3.	Soil Moisture conservation depletion	
<ul style="list-style-type: none"> - Safeguards regarding protection of rare, threatened and endangered species and their habitats. - Genetic, species, and ecosystem diversity 		
	Due to felling the original old species are fell and the endangered species are extinct and their habitat is disturbed	<ul style="list-style-type: none"> • After the roadside felling the species selection for the re-plantation is normally the same. It is also noteworthy that during roadside felling Rare, threatened and endangered species are not found.
<ul style="list-style-type: none"> - Ecological functions and values - Genetic, species, and ecosystem diversity. 		
4.	Habitat of reptiles, amphibian	<ul style="list-style-type: none"> • Instill preservation of shrubs and trees

	and other animals destroyed	<ul style="list-style-type: none"> • regulation of grass cutting and removal of shrubs to reduce exposure of soil • Conservation and sustainable use of shrub existing on the surface. • planting of trees, shrubby plants, herbs and grasses to maintain the habitat of animals residing in particular area
11.	Threat to flora diversity	<ul style="list-style-type: none"> • Sustainable exploitation of trees, herbs and shrubs. • Planting of sustainable shrubs, herbs and trees.
Forest regeneration and succession.		
5.	Green Cover Depletion	<ul style="list-style-type: none"> • planting of trees, shrubby plants, herbs and grasses to maintain the habitat of animals residing in particular area. • Regulation of felling to optimize the habitat and green cover of the area included in the strip plantation.
6.	Carbon sinking will be depleted	<ul style="list-style-type: none"> • Conservation and sustainable use of shrub existing on the surface. • Restriction of felling of trees including shrubs and restriction of removal of grasses. • Sustainable removal of old trees and systematic re-plantation to not expose soil.
Impact on water resources and fertility		
7.	Water Table Depletion	<ul style="list-style-type: none"> • Gully Plugging. • Construction of soil conservation area: brush dam, gnian dam, mason structures. • construction of trench along the contour to increase recharge of rain water
<ul style="list-style-type: none"> - Impact of vehicle movement - Effect of any road construction and maintenance work in the forest 		
8.	Noise Pollution	Avoiding use of heavy machinery in felling, transportation, plantation of trees.
9.	Air Pollution	<ul style="list-style-type: none"> • Sustainable exploitation of trees, herbs and shrubs. • Planting of sustainable shrubs, herbs and trees.
10.	water pollution due to use of pesticides	<ul style="list-style-type: none"> • Restriction in use of chemical pesticides. • Use of organic/ herbal pesticides should be

		promoted.
12	Increase in temperature	Plantation of trees with high growth rate and bigger crown cover area.
13	Water seepage from canals	<ul style="list-style-type: none"> • Increase the drainage condition of the area. • Plantation of trees, shrubs, herbs and grasses suitable for marshy lands and water filled condition.
SOCIAL IMPACTS		
	Employment through Forestry Management Activities	<ul style="list-style-type: none"> • Promote agro forestry through 4 modules: home state land planting, inter cropping, block planting, bund planting. • Ensure timely and transparent remuneration payment through Direct Benefit Transfer (DBT).
	Decrease in availability of fuel wood	<ul style="list-style-type: none"> • Plant more fuel wood species as listed in working plans. • Promote smokeless stoves, fuel efficient stove including biogas and LPG.
	Decrease in availability of fodder	<ul style="list-style-type: none"> • Plant fodder species in accordance with working plan
	loss of trees of religious importance	<ul style="list-style-type: none"> • Identify trees of socio-religious importance during gram samiti meetings and conserve them. • If their felling is unavoidable, ensure re-plantation of similar specie in vicinity.
	loss of trees of historical importance	<ul style="list-style-type: none"> • Identification and conservation of historically important trees. • Conservation of historically important trees should be considered while planning any developmental works in the area. If felling is inevitable, it should be compensated through re-plantation of similar species or translocation of the tree
	Effects on Local Bazaars	<ul style="list-style-type: none"> •
	Decrease in availability of NTFP	<ul style="list-style-type: none"> • By providing material from agro-forestry and block forestry availability of fuel fodder and NTFPs should be ensured
	Loss of Agricultural value to shade	<ul style="list-style-type: none"> • As per the current provisions of Working Plans, harvesting rights of last row trees, adjacent to the farm, is provided to the farmer. The economic benefits of harvesting the trees exceed the loss caused by shade.

	Lower water table causes less availability of water for irrigation purposes that affects farmers.	<ul style="list-style-type: none"> • Construction of water conservation structure, contour trenches, gully plugging and other measures.
	soil erosion along canals may lead to flooding of nearby areas during rainy season.	<ul style="list-style-type: none"> • Area along canals should be covered with grass, shrubs and bushes and other,

8. Conclusion and Recommendations

Upon review of Divisional Working Plans, on-site inspection of forestry management activities, stakeholder consultation it was so concluded that the existing management policies of both UP Forest Corporation and Uttar Pradesh Forest Department are working as per the prescriptions of National and State forest management policies. The ownership of the land and tress are clearly established and the inventory management is easily traceable . The usufruct rights of local dwellers are protected by national and forestry laws. While grazing and mule paths are hampering natural regeneration in certain areas, barricading the same will negatively impact the wildlife in the area. Thus, the management should sensitize the local population towards being mindful of actions in forest areas.

The employees of both UPFD and UPFC are protected by national labor laws and are provided a safe and healthy work environment along with group insurances, EPF, GPF, Medical Cover etc. The department could compile a central data base of employees for further data gathering that may lead to betterment in the existing system.

All the forest management activities are conducted in accordance with the WPs which enlists the mitigation measures for all the challenges faced to ensure a sustainably managed forests. The physical boundaries of the division is clearly stated in the working plans but not clearly demarcated on land. Efforts should be made to protect such open boundaries from encroachment and illegal felling. Areas prone to such violations should be specifically listed in the working plan and necessary resource allocation provisions should be made.

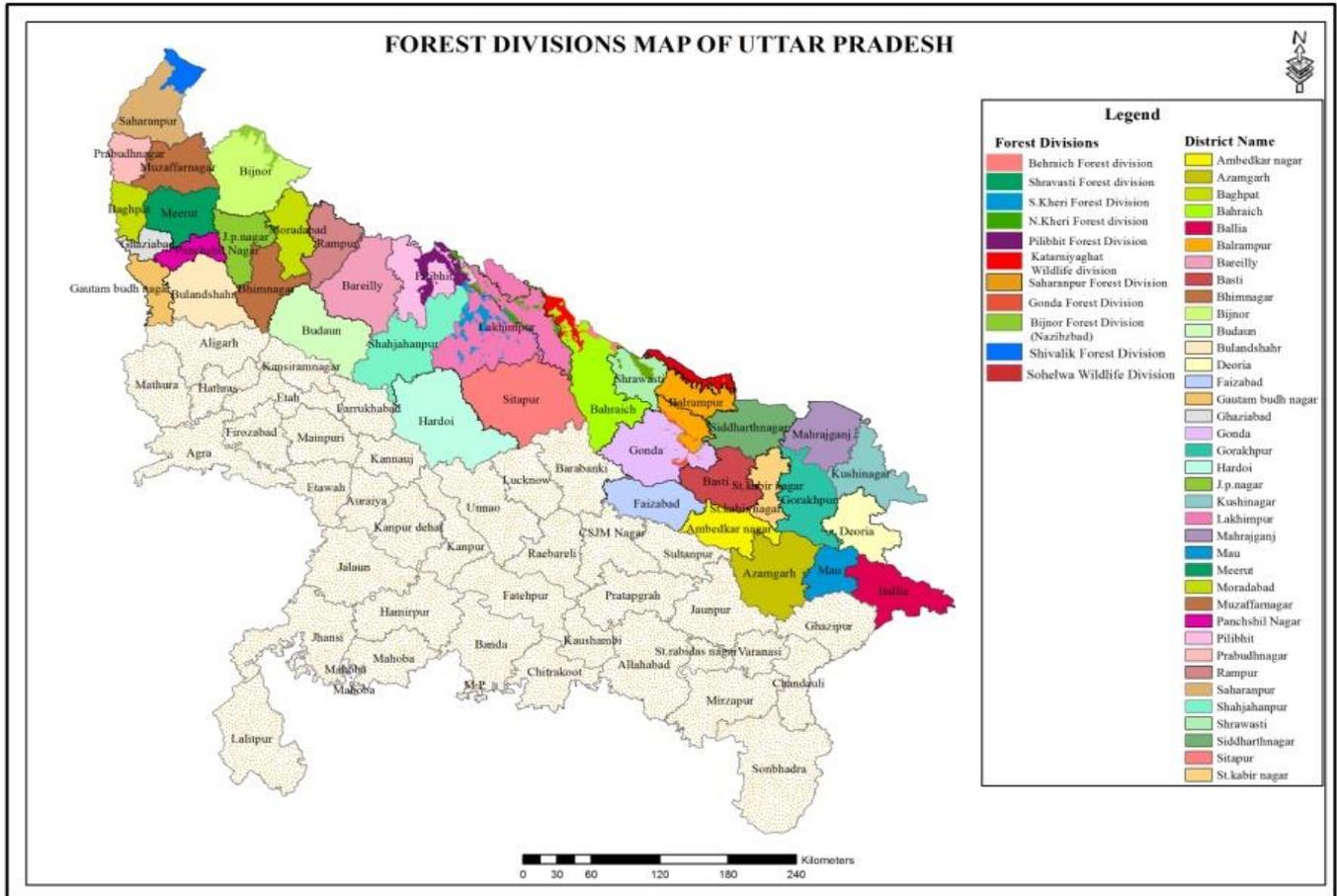
UPFC is making efforts to engage local farmer in reaping the benefits of forest certification. It is believed that if the efforts are successful, both UPFC and UPFD will gain further support from local populations towards conservation and protection of forests. In addition to that, the CSR activities taken up by UPFC and UPFD to promote afforestation and ecotourism in the studied areas also sensitizing the public towards trees and ecosystem of forests. It is recommended that UPFC and UPFD conduct post-implementation monitoring of these projects as well as inculcate the feedbacks towards betterment of its practices.

Proposed Social Forestry Divisions under the Scope of Study

S.No.	Social Forestry Division	Area (Hec.)
1	Gorakhpur	426.25
2	Sohagi Barwa	1324.73
3	Siddharthanagar	1053.066
4	Kushinagar	557.1
5	Basti	235.678
6	Devariya	356.7
7	Azamgarh	63.5
8	Ballia	586.95
9	Sant Kabir Nagar	516.305
10	Mau	589.5
11	Gonda	50.5
12	Faizabad	183
13	Ambedkar Nagar	34
14	Shravasti	76.875
15	Suhelwa Wildlife	270.5
16	South Kheri	582.6
17	North Kheri	226.375
18	Sitapur	688.048
19	Hardoi	824.6
20	Shahjahanpur	802.895
21	Pilibhit	456.425

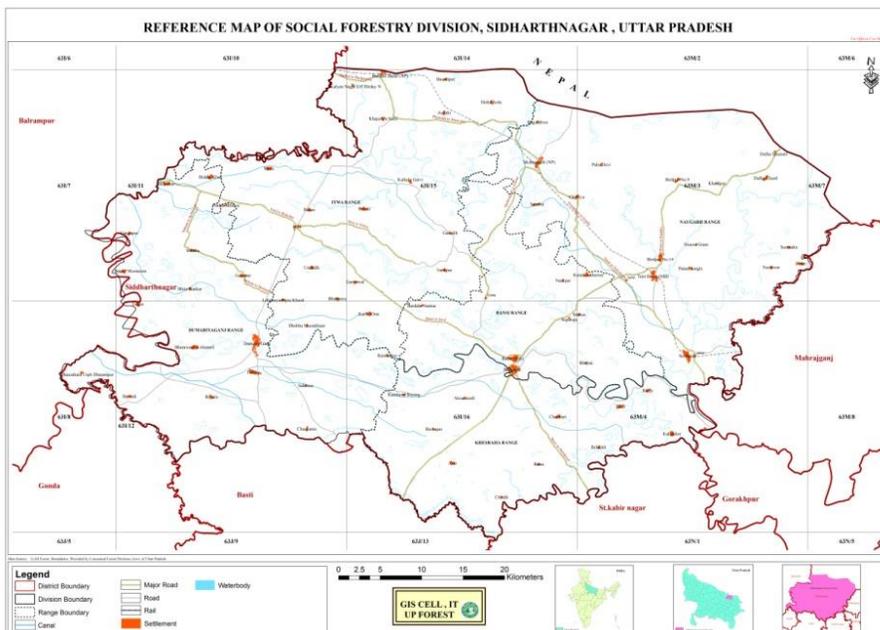
22	Bahraich	529.5
S.No.	Social Forestry Division	Area (Hec.)
23	Bulandshahar	478.64
24	Gautam Budh Nagar	72
25	Ghaziabad	63.985
26	Hapur	39
27	Meerut	371
28	Baghpat	41
29	Muzaffarnagar	102.5
30	Shamli	31
31	Saharanpur	118.5
32	Bijnor	1019.225
33	Bareilly	169.9
34	Sambhal	116
35	Rampur	387.52
36	Budaun	443
37	Moradabad	280.7
38	Amroha	328.63
	TOTAL	14497.697

Map of Forest Areas under Scope of Study



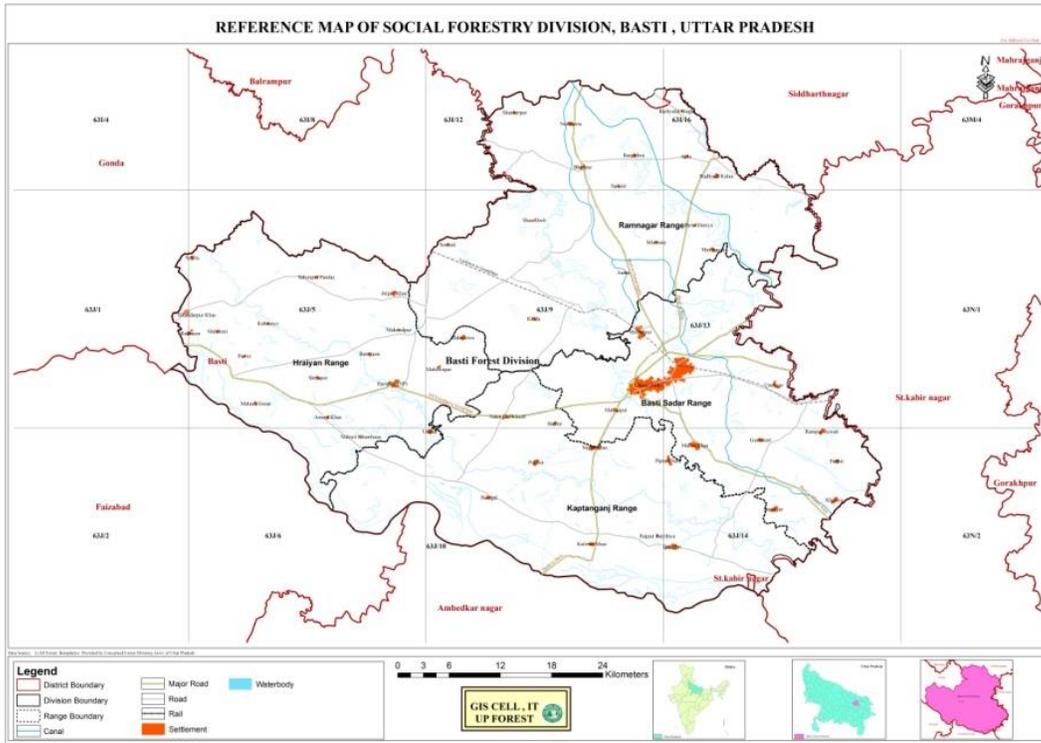
Maps of Forest Divisions Under Scope of Study

Siddharthanagar



Maps of Forest Divisions Under Scope of Study

Basti

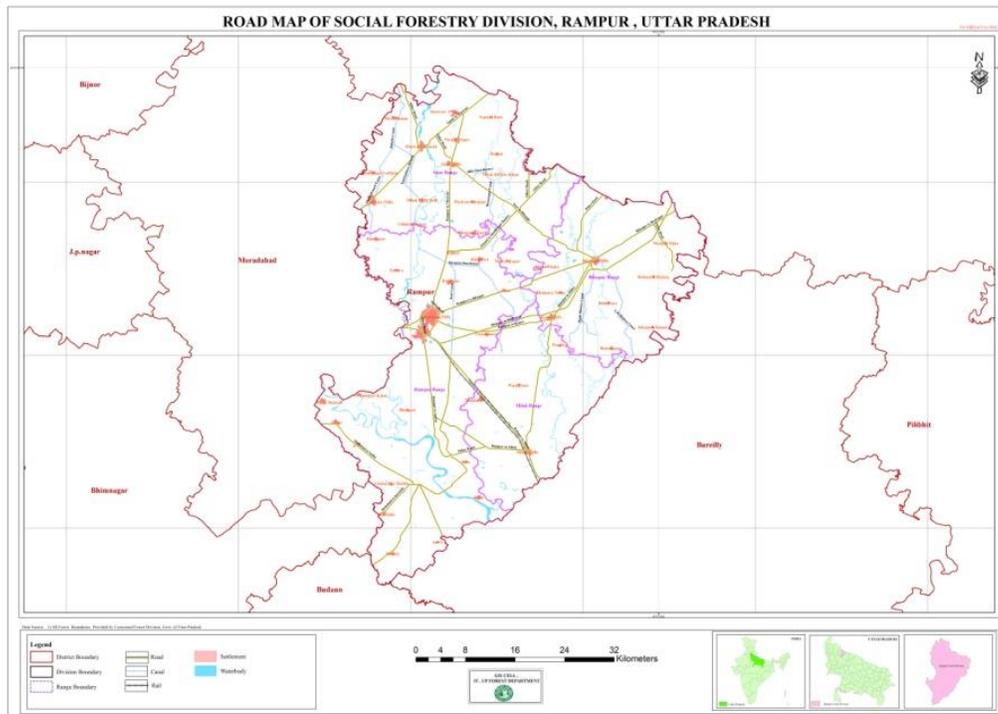


Devariya

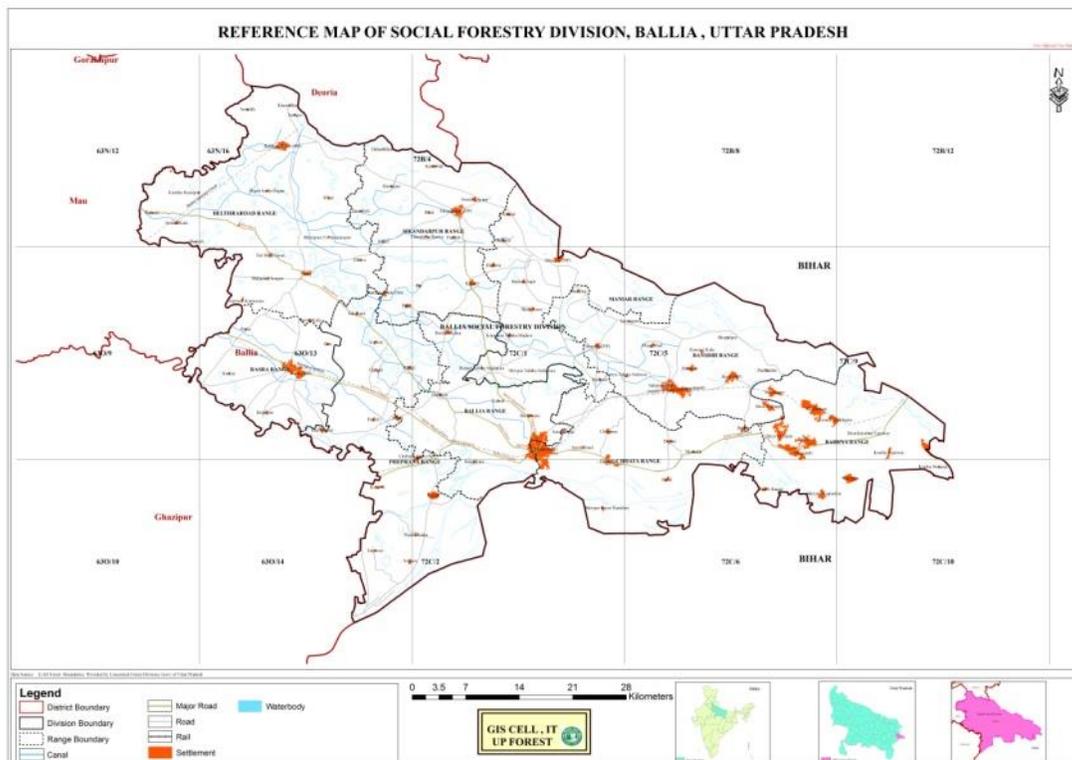


Maps of Forest Divisions Under Scope of Study

Rampur

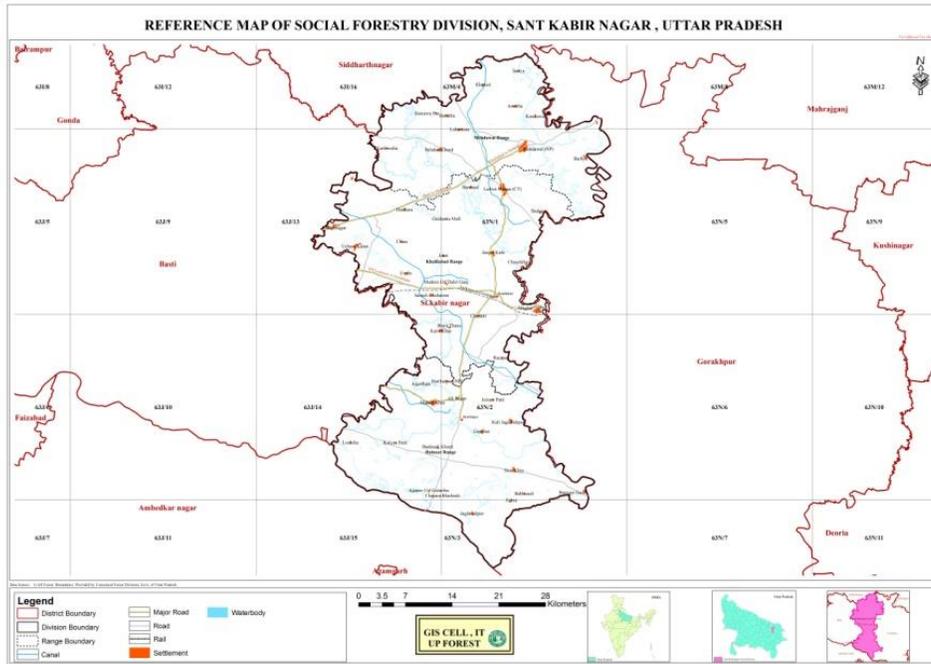


Ballia

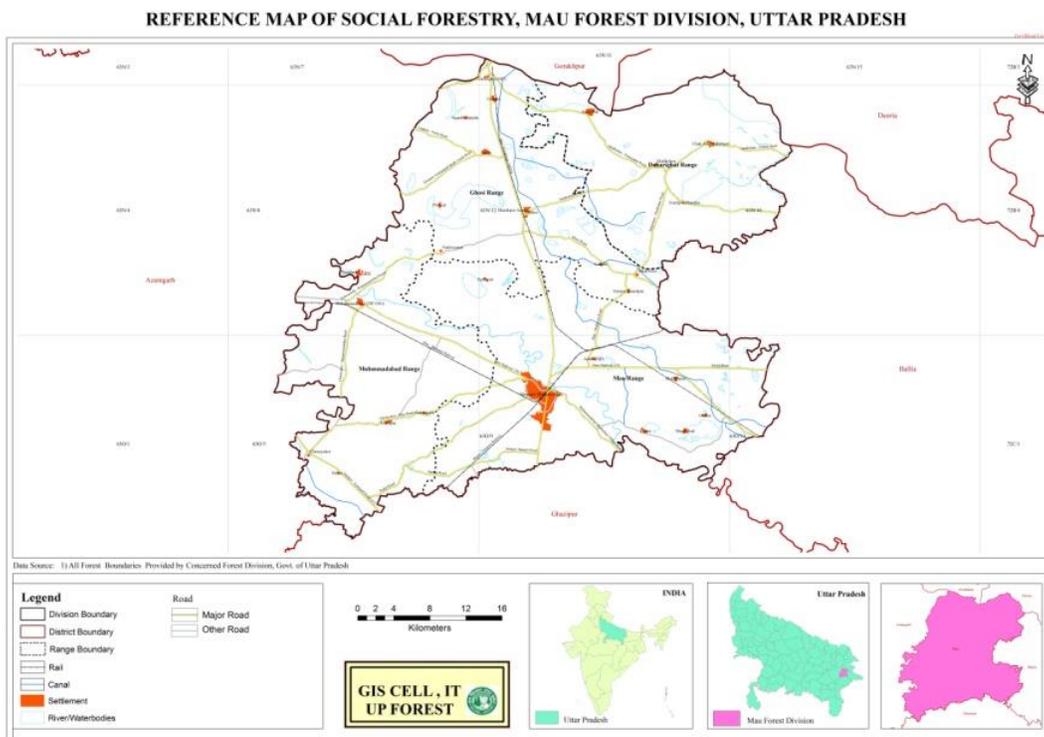


Maps of Forest Divisions under Scope of Study

Sant Kabir Nagar

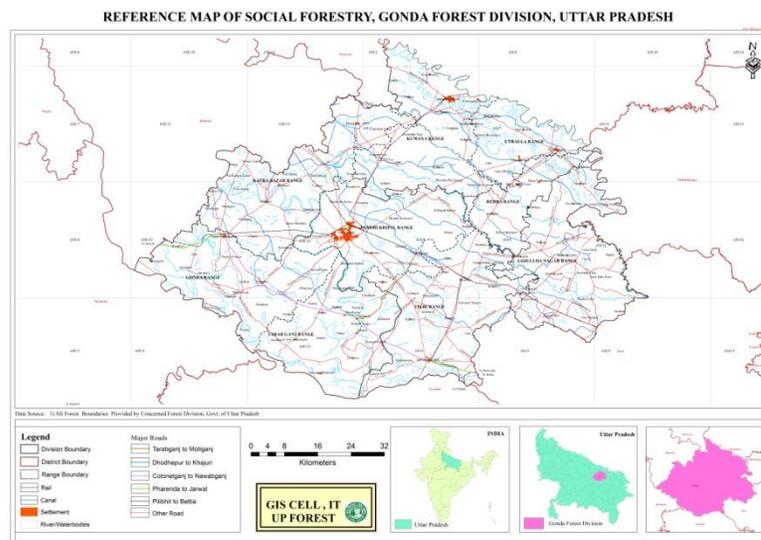


Mau

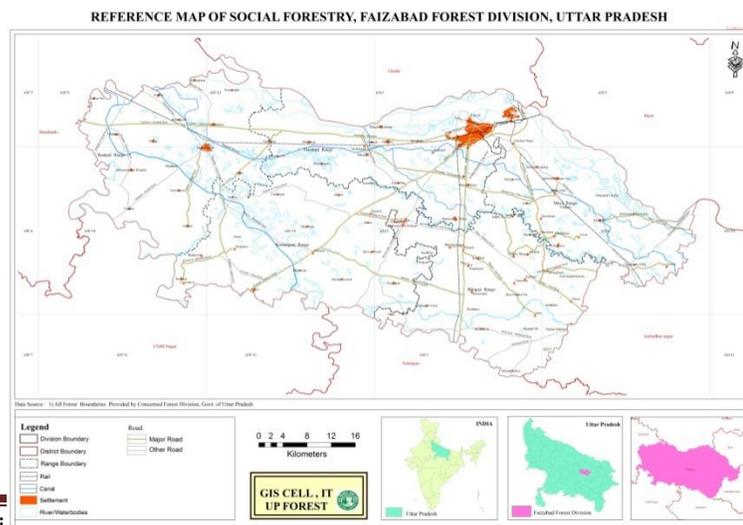


Maps of Forest Divisions Under Scope of Study

Gonda

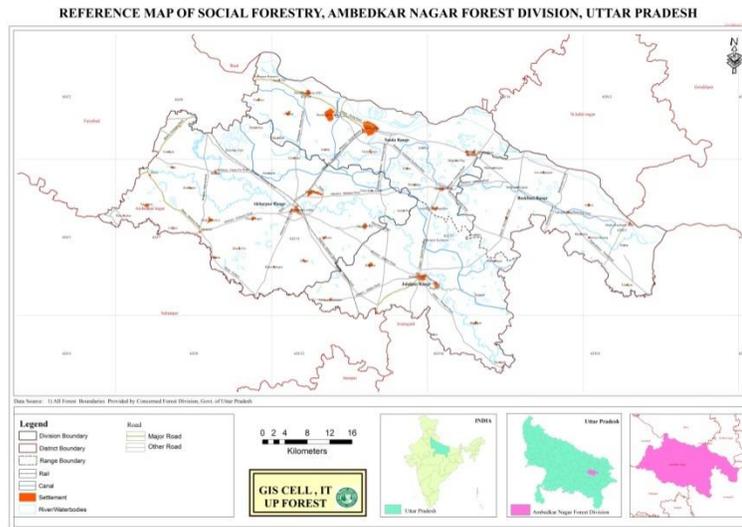


Faizabad

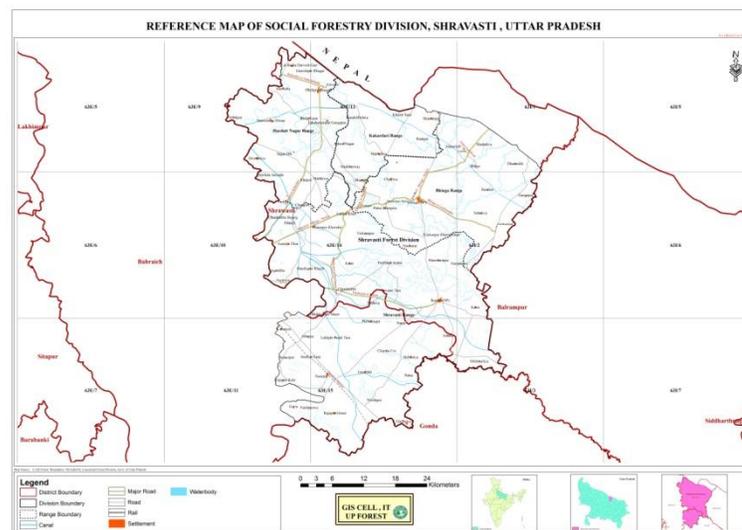


Maps of Forest Divisions Under Scope of Study

Ambedkar Nagar

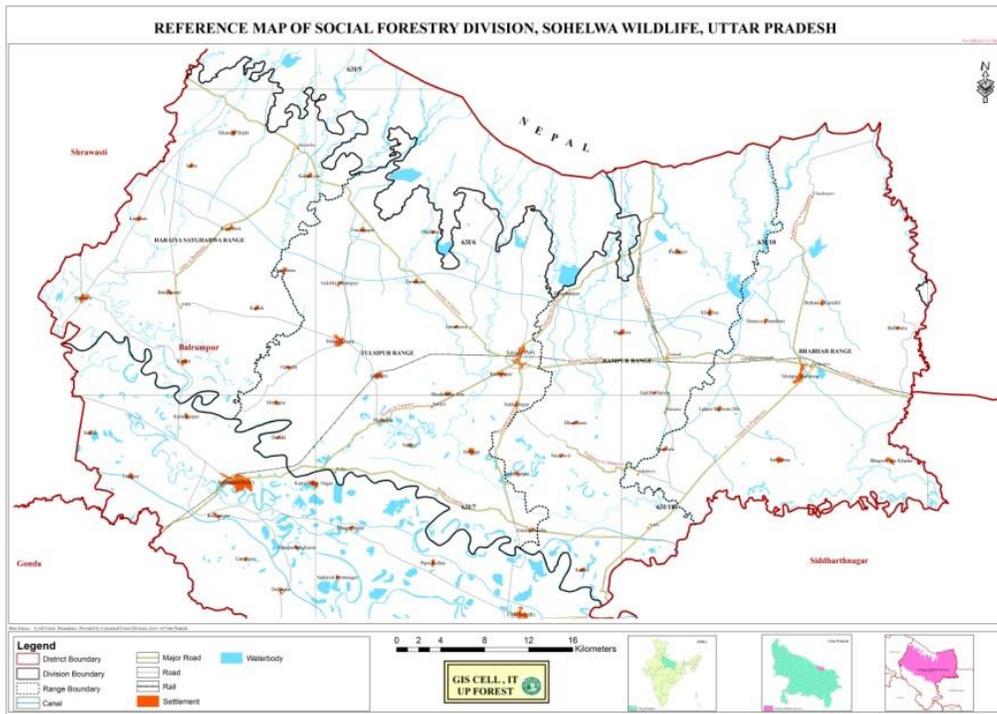


Shravasti

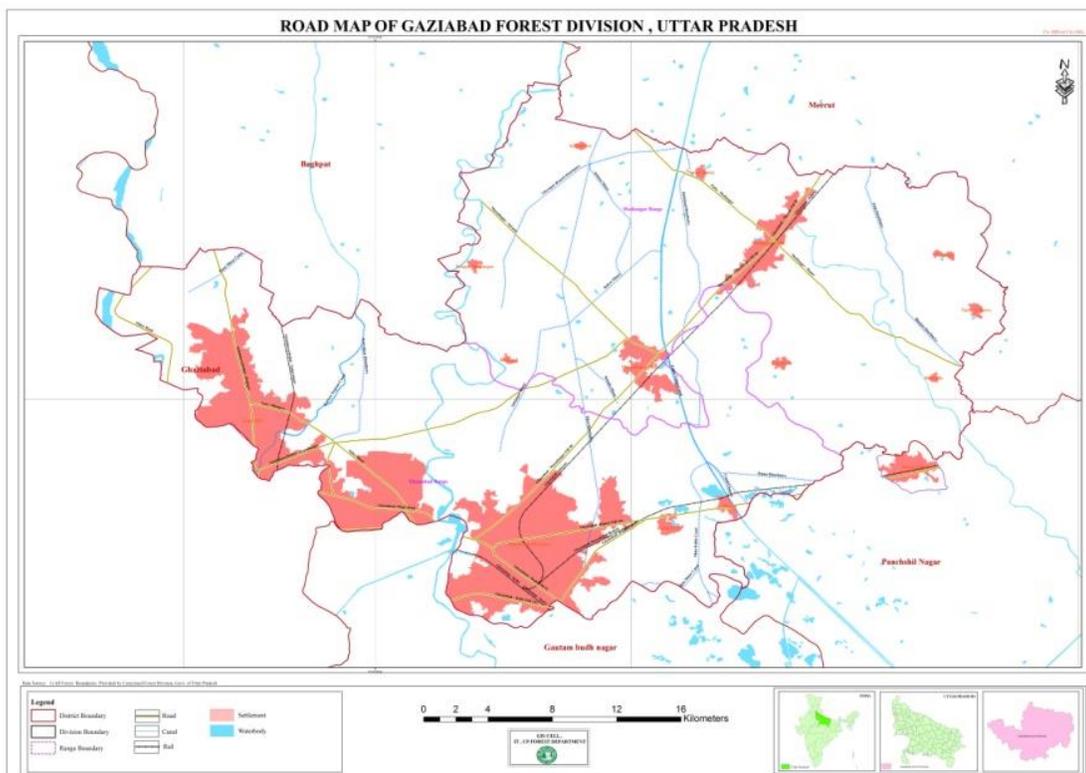


Maps of Forest Divisions Under Scope of Study

Suhelwa Wildlife

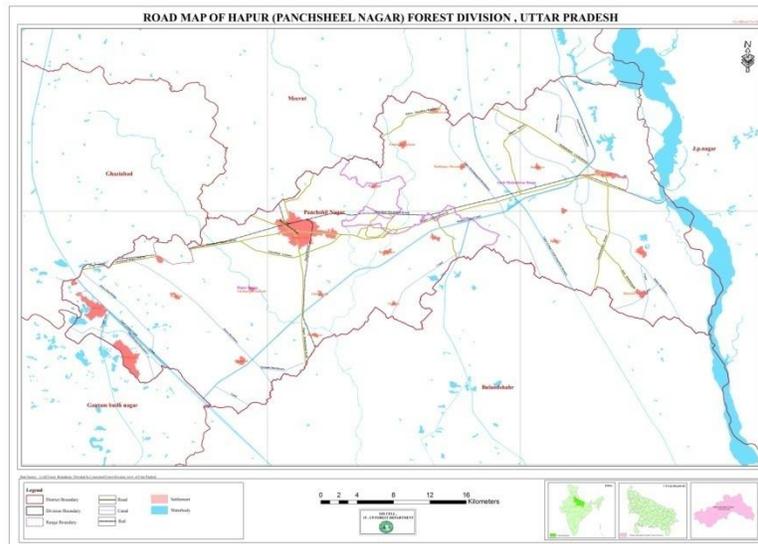


Ghaziabad

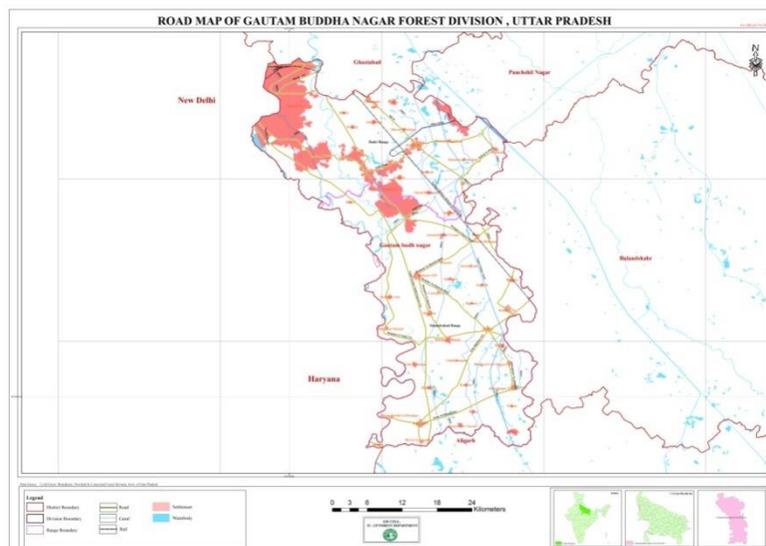


Maps of Forest Divisions Under Scope of Study

Hapur

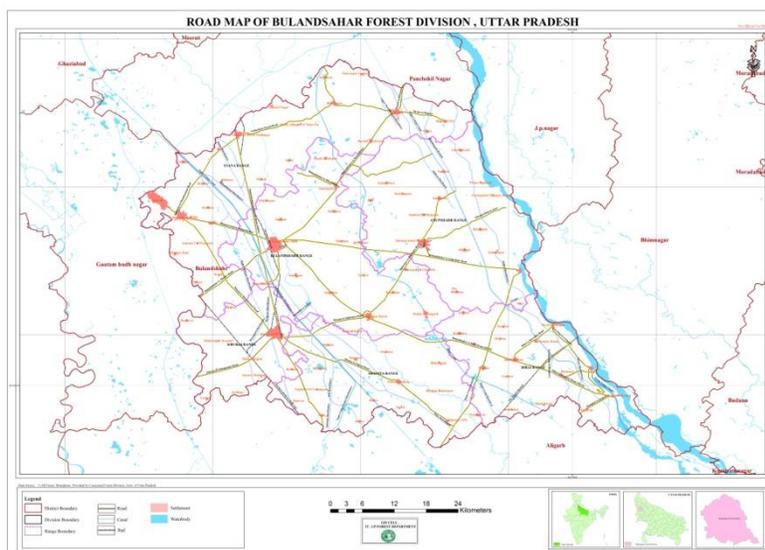


Gautambuddha Nagar

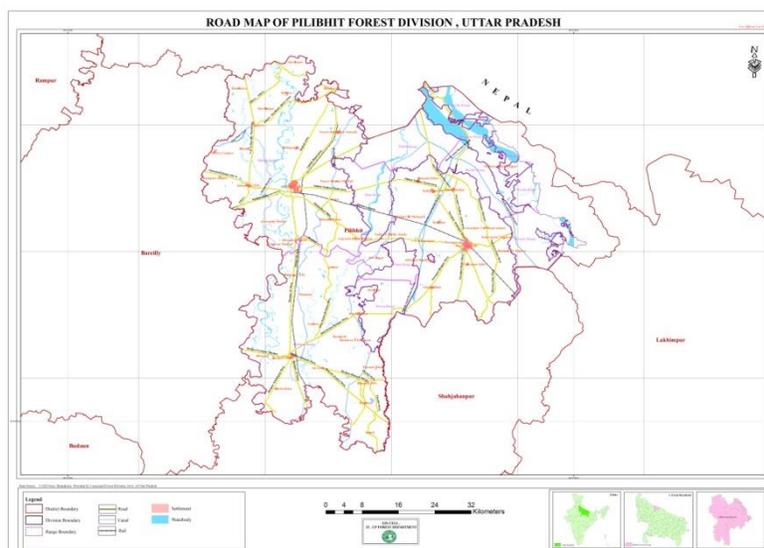


Maps of Forest Divisions Under Scope of Study

Bulandshahar

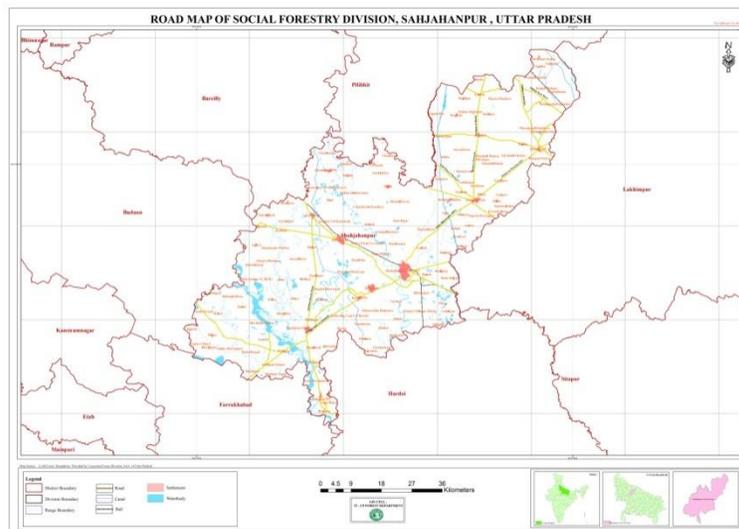


Pilibhit

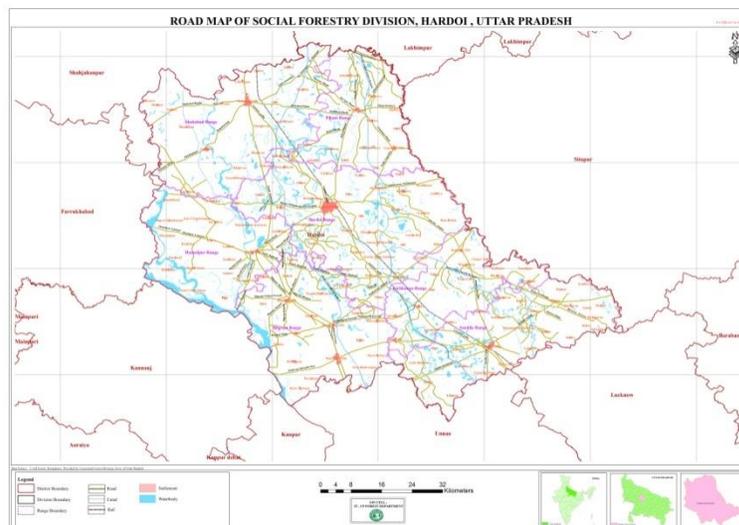


Maps of Forest Divisions Under Scope of Study

Shahjahanpur

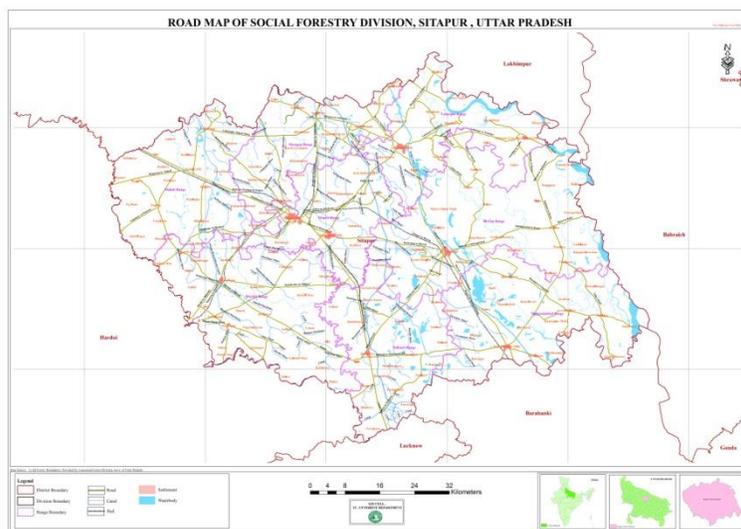


Hardoi

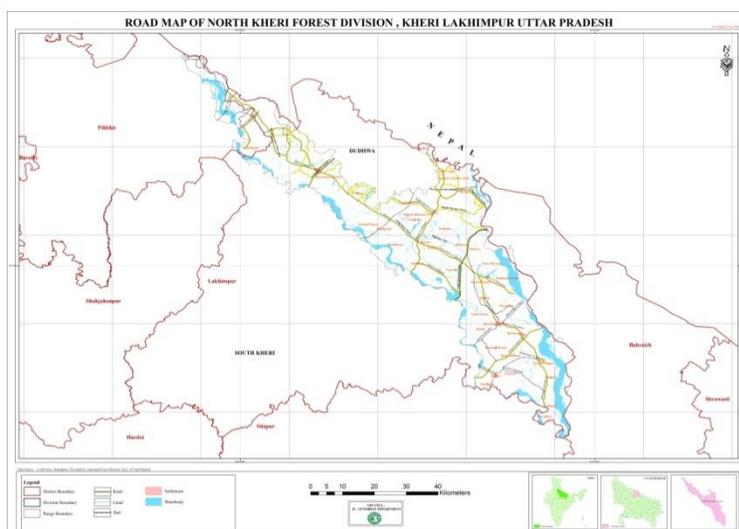


Maps of Forest Divisions Under Scope of Study

Sitapur

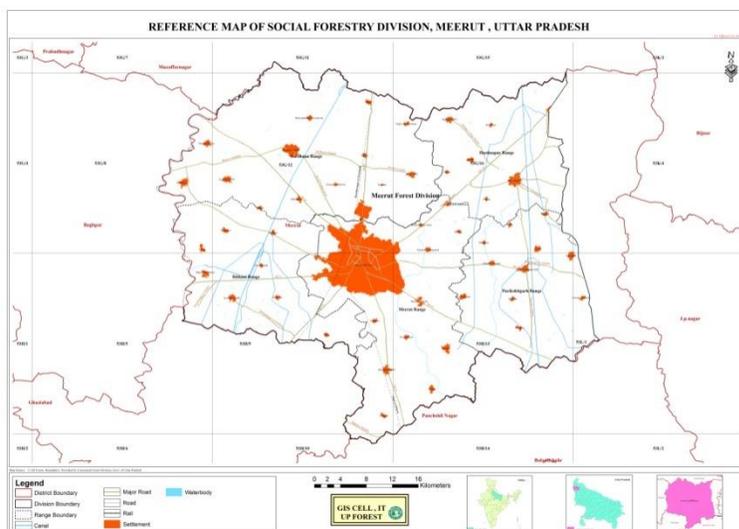


North Kheri

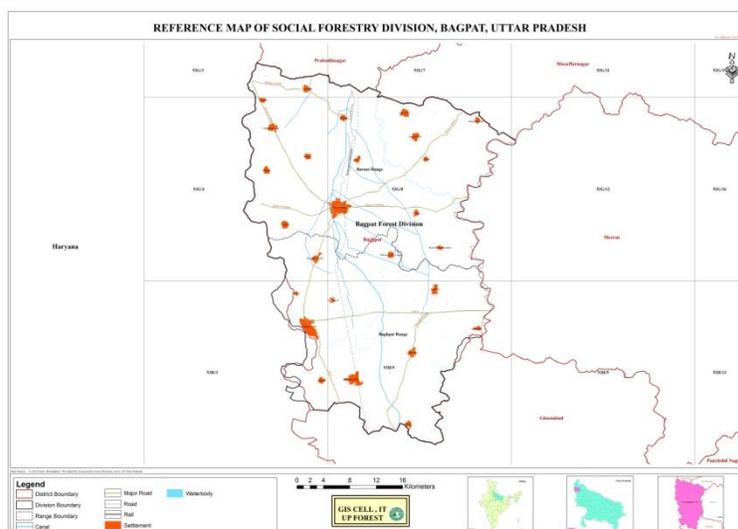


Maps of Forest Divisions Under Scope of Study

Meerut

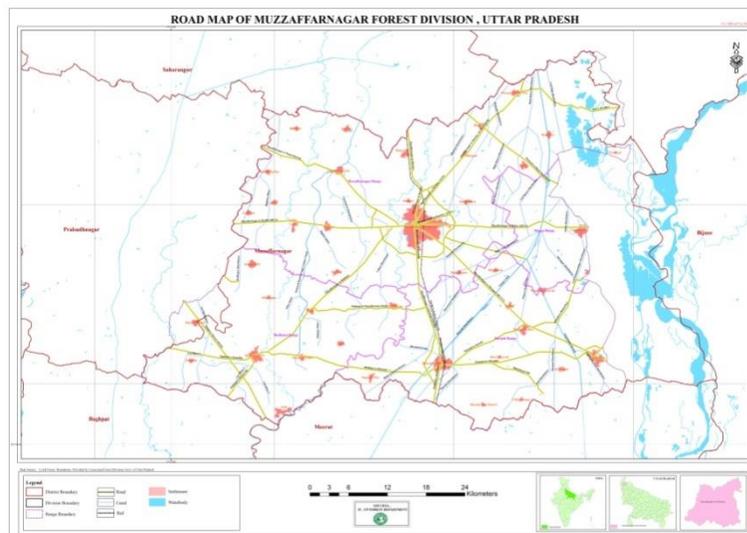


Baghpat

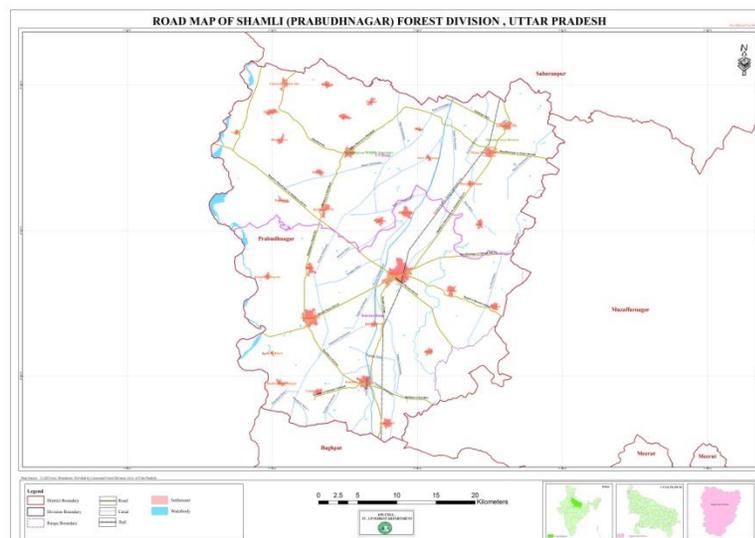


Maps of Forest Divisions Under Scope of Study

Muzaffarnagar

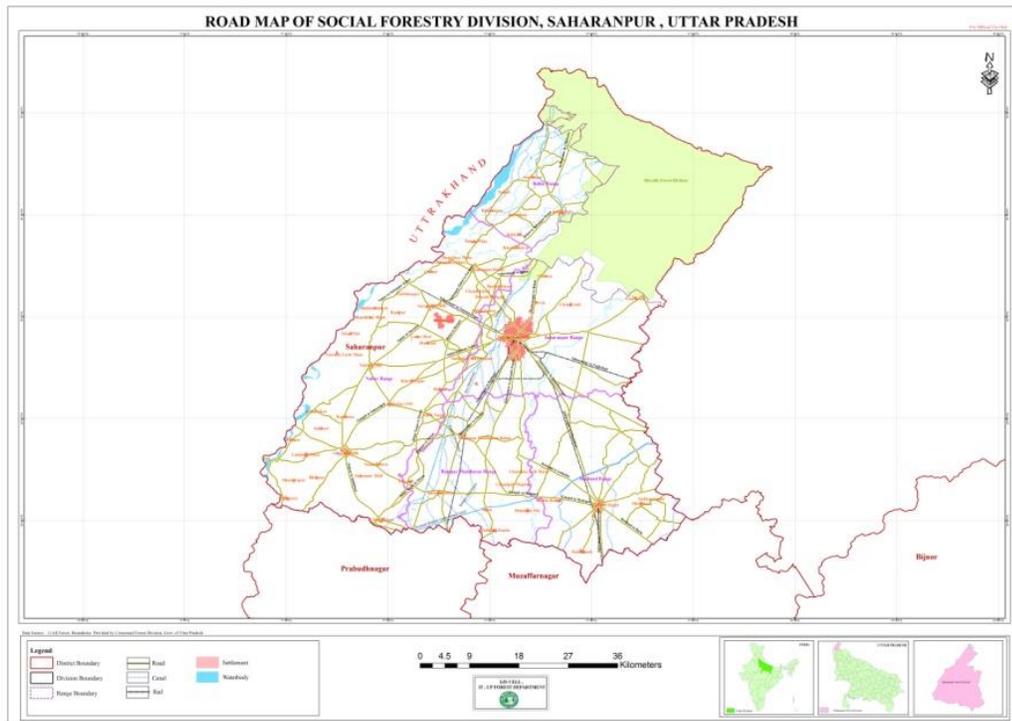


Shamli



Maps of Forest Divisions Under Scope of Study

Saharanpur



Bijnor

