

ASSAM FOREST POLICY, 2004

Background:

Forest resources have been regulated since early times. The roots of legislations, policies and guide lines for natural resource management in India can be traced back to the days of British colonialism. The relevant constitutional framework at the backdrop of management of forest resources are briefly enumerated as follows.

The Constitution of India :

Article 48 A one of the Directive Principles, which state that the State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country.

Article 51 A deals with the fundamental duties of citizens, which includes the citizen's duty to value and preserve the rich heritage of our composite culture and to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures.

Article 246 points towards the Seventh Schedule to the Constitution, which enlists (in the union list, and the concurrent list) the subjects that the Central and State Governments are to legislate upon. Forest is one of the subjects placed in the Concurrent List on which both the Central and State Governments shall legislate upon.

The National Forest Policy :

In 1952, the erstwhile Ministry of Food and Agriculture, Government of India enunciated a Forest policy to be followed in the management of state forests in the country. The need for this Policy was to highlight the changes since the enunciation of the Forest policy of 1894. Forest, however, continued to be viewed as source of revenue. While recognizing that the proportion of land to be kept permanently under forest would naturally vary in different regions, the policy said that practical consideration suggests, "that India, as whole, would aim at maintaining one third of its total land area under forests." Emphasis was laid on the conversion of low value mixed forests to high value plantation of commercial species.

Large-scale deforestation and diversion of forest land for non-forestry uses finally led to the formulation of a new Forest Policy of 1988. The National Forest Policy, 1988 enunciated nine basic objections and identified five essentials of forest management and sets the strategy to attain the goal. Unlike the previous "user approach " Policies, the Forest policy of 1988 was a pro people document, placing greater emphasis on the ecological role of forests and recognising for the first time the rights of the people, especially the tribals, with the direction that " heir domestic requirements of fuel-wood, fodder, minor forest produce and construction timber would be the first charge on forest produce.

The North East Forest Policy:

For the North East Region of India, having a special status for rich natural heritage, a separate North East Forest Policy is being framed by the Ministry of Environment and Forests, Government of India.

Need of Revision of policy due to 73rd and 74th Constitutional Amendments:

The 73rd and 74th amendment to the Indian Constitution in 1992 made it mandatory for all the States to introduced democratic decentralization of governance through 3 tier structures of Panchayati Raj (Local Self Government) institution (PRIs). The spirit of the constitutional amendment is to promote participatory democracy through empowering Gram Sabhas to have a decisive say through open and transparent decision making at the village level instead of the concentration of decision-making power in a few elected representatives. The 29 functions recommended for decentralization to the Panchayat Raj Institutions listed in the 11th schedule include "Agricultures, Land reforms, Land improvement and management. Minor irrigations, Water management, Watershed development, Animal husbandry, Fisheries, Social and Farm forestry, Non – Timber Forest Produces (NTFPs) and maintenance of community assets, Management of state owed forestlands is not included but may be specifically notified by individual State Governments. These objectives are endeavoured to be implemented through empowerment of the village level Joint Forest Management Committee (JFMCs).

1. PREAMBLE: WHY A SPECIFIC FOREST POLICY FOR ASSAM?

Assam falls under one of the recognized mega biodiversity zones of the world. Despite having priceless treasure of flora and fauna together with the most suitable natural conditions for sustainable growth of forestry , the State has been progressively losing its biodiversity as well as a vast expanse of forest due to various reasons including excessive biotic pressures. While the problems affecting the forestry sector of Assam are largely home grown and unique, the most damaging factor for steady depletion of Assam's forest cover has been the unabated encroachment in the reserved forests over the last few decades. The protection and conservation measures deemed to be implemented with the sole responsibility hitherto vested in the Forest Department appeared to be inadequate, more so, in the matter of last two decades as the unique ground realities that have emerged in the 80's onward reduced the efficacy of the role assigned to the forest personnel in the State. The glory of the forestry sector of the days gone by

has been undermined mainly due to the following reasons :

(I) The aftermath of the great Earthquake of Assam in 1950, annual recurring floods in the Brahmaputra and its tributaries, changing river courses and erosions result in lakhs of displaced people. The reserved forest of Assam throughout the 60's, 70's and even today seem to be targeted as the most suitable space for the rehabilitation of human as well as cattle population.

(II) Massive population increase and organized group encroachment in the reserved forests, at times backed by groups of armed militants from the 80's onwards.

(III) Grazing and poaching in the protected areas.

(IV) Inadequacy in addressing the needs of the people from the forestry sector. In view of the diminishing natural resource base in the state which has become insufficient to meet the genuine demands of the people, illegalities thrived forming various nexus leading to forest destruction.

In view of the perceptible shortfalls in protecting and conserving the forest, time has come to take a hard look at the lacunae in the existing Policies. As such, it has become imperative to review the situation and adopt new strategies of forest conservation in Assam., including preservation , enhancements , maintenance , and evolution of management strategies for improved productivity , sustainable utilization and overall quantitative and qualitative improvement of stand composition and structure for enrichment of the environment.

Accordingly, the Government of Assam has decided to adopt an environment and peoples friendly State Forest Policy of Assam.

2. Objectives:

2.1 The basic objectives that govern the Assam Forest Policy, 2004 are :

Maintenance of environmental stability through preservation and where necessary, restoration of ecological balance that has been adversely disturbed by serious depletion of forests in the State.

Conserving natural heritage of the state by preserving the natural forests and wetlands with vast variety of flora and fauna which represent the unique biodiversity and genetic resources of the State.

Checking the denudation of forests and soil erosion in catchments areas of rivers and reservoirs for soil and water conservation; reducing the fury of floods and droughts; recharging of water bodies, aquifers and arresting siltation of the reservoirs.

Promoting non consumptive use of Protected Areas for the purpose of providing livelihood support to the fringe dwellers by encouraging sustainable eco-tourism and eco-development.

Enhancing the quality of forests/tree cover in the denuded and degraded land of the State through the involvement of people and symbiosis of traditional knowledge and modern technology.

Increasing the forest/tree cover in forest deficient areas of State like chars, chapories permanently established along the course of the river Brahmaputra , through community afforestation and suitable agro-forestry and farm forestry models.

Meeting the bonafide livelihood needs of fuel wood, fodder , bamboo, canes , small timbers and other N.T.F.Ps of the rural poor and the tribals in particular, with due regard to the carrying capacity of the forests.

Increasing forest productivity through shift of accent from major to minor forest produces; from top canopy to lower canopies and from flagship species to smaller denizens of the forest.

Encouraging efficient utilization of forest produce and maximizing value addition to the timber and non-timber forest produce in the State. The use of non-durable secondary species as constructional timber is to be encouraged after inducing durability through wood preservation techniques.

Creating a massive people's movement with special involvement of women for achieving the objectives and to minimize pressure on forests under the community based conservation programme.

Demarcation of all forest lands, irrespective of ownership, for the purpose of scientific management through special measures.

Understanding the forest dynamics and encouraging the researchers from the region to undertake quality research works on forest conservation and its suitable use.

Encouraging conservation of genetic resources and development of traditional ethnic knowledge repository of Assam.

2.2 The principle aim of this policy is to ensure progressive sustainable development of the forests of Assam, to meet the twin

objectives of environmental stability and ecological balance together with improved livelihood support system for her people. The Management Paradigm as envisaged in the policy given below.

2.2.1. The mega-biodiversity existence in Assam will be protected and developed with the active involvement of the communities.

2.2.2. Without compromising the basic tenets of forest conservation-the forestry sector will be selectively opened to the people of Assam for income and employment generation.

2.2.3. The Forest cover of Assam will be progressively increased and maintained through scientific sustainable forest management practices giving emphasis on the traditional knowledge and understanding of the ethnic communities of Assam.

3. The essential of forest management:

3.1 Exciting forest and forest land, including unclassed State Forests and Community Forest would be protected and their productivity improved through latest technological inputs. Forest and vegetal cover would be maintained and where necessary, increased rapidly with open forests being to dense forests, particularly on hills slopes and in catchments areas of rivers and reservoirs.

(Unclassed State Forest means any lands at the disposal of the Government and not included in a reserved or village forests as defined in the Rule made under the provisions of Section 34 (1) of AFR, VII of 1891 vide notification No. 1443-R, dtd. 20.5.1922)

3.2 The network of national parks, wildlife sanctuaries, conservations reserved, community reserves, biosphere reserves, world heritage sites and other forest areas would be strengthened and extended adequately with the involvement and meaningful participation of communities.

3.2.1 The existing rhino bearing areas and potential rhino habitats would be conserved as glorious heritage of Assam.

3.2.2 The Tigers Reserves would be protected to ensure maintenance of a viable population of tiger in the State for scientific, economic, aesthetic, cultural and ecological values.

3.2.3 To strengthen Elephant Reserves to ensure peaceful co-existence of man and elephant through ecological restoration, scientific and planned management of natural habitat and migratory routes in order to maintain viable population of Wild Asiatic Elephants in the State. It would also be endeavored to promote measures for mitigation of man–elephants conflict in crucial areas, strengthening the measures for protection of wild elephants from poachers and un-natural causes of death, set up public awareness and educational programmes and veterinary care.

3.2.4 To conserve all other species of threatened endemic wildlife and their habitats including golden langur, hoolock gibbon, river dolphin, swamp deer, gaur, wild buffalo, pygmy hog, hispid hare, spot-billed pelican, white-bellied heron, greater adjutant stork, white winged wood duck, greater spotted eagle, phallus's fish eagle, swamped francolin, slender billed vulture, blyth's tragopan, purple wood pigeon rufous-backed hornbill, marsh spotted babbler, jordon's babbler, black -breasted parrot bill, gharial, endangered turtles etc.

3.3 Development of sufficient fodder, fuel and pasture bamboo, canes and other N.T.F.P. resources in areas adjoining forests, minimise harvesting of forests beyond sustainable limit. Since fuel wood continues to be the predominant source of energy in rural areas afforestation would be intensified with special emphasis on augmenting fuel wood production to meet the requirement of rural people. Fast growing fuel wood production programme has to be initiated in the fringe areas through JFMCs. Similarly alternative source of energy will be identified propagated and practiced.

3.4 N.T.F.Ps including medicinal and aromatic plants provides sustenance to the tribal and other people residing in and around the forests. Such produce would be sustainably managed and production enhanced with the objective of generating employment and income opportunities for the local people.

3.5 Supply of timber and small woods to urban centers from non-forest sources is necessary to reduce pressure on natural forests. Therefore, Agro-forestry, Farm-forestry and Non-Farm cultivation of timber trees would be encouraged in the State.

3.6 Trade of bamboo and other N.T.F.Ps including medicinal and aromatic plants such as Agar wood and Patchouli etc. after adequate value addition and development of market facilities would be actively promoted. Surplus raw materials could also be exported after meeting local needs, within the limit of sustainable production.

3.7 Considering the inherent advantage, positive brand image as well as suitability of soil and climatic condition of Assam for commercially profitable Agar wood cultivation-the people of Assam would be given opportunity to grow Agar trees abundantly and trade/value additions be facilitated by liberalizing and suitably modifying existing rules and procedures.

3.8 Targeting on broad range of goods and services in terms of physical, material, human, social, cultural and environmental assets in conjunction with appropriate entitlement regime, peoples protected area (PPA) envisions a pro-active and people's friendly framework to ensure long term protection and maintenance of biological diversity and providing at the same time a sustainable flow of natural products and services to meet local community needs. Therefore, a network of PPA would be established as people's pool of assets for strengthening livelihood security of forest dwellers.

4. Strategy :

4.1: The national goal is to have a minimum of one-third total geographical area of the country under forest or tree cover. In Assam, the total forest cover is 27,714 Sq. Km, which is 35.33% of the total geographical area of the State. This being so emphasis is to be laid on the consolidation and preservation of the existing forest cover and increases their productivity.

4.1.1 Existing forest cover would be maintained and enriched (open forest would be resorted back to dense forest) consistent with the developmental needs of the State.

4.1.2 Enrichment plantations in open forests and protection of natural regeneration through Forest Development Agencies, which are confederation of Joint Forest Management Committees and Eco-Development Committees in respective Forest Division.

4.2 Management of State, Autonomous Council, Community and Private forests:

4.2.1 The activities which interfere with forests that clothe steep slopes, river catchments, reservoirs and geologically unstable areas would be restricted. Tropical wet and moist forests would be cautiously and sustainably managed consistent with their role in preserving the biodiversity and hydrological cycle and meeting the livelihood needs of the people of the State.

4.2.2 No forest would be permitted to be worked without a duly approved working/management plan which should be in a prescribed format and in keeping with National Forest Policy/ North East Forest Policy/ State Forest Policy on the principle of sustainable forest management. The effects of forest management on forests would be periodically measured with the help of set criteria's and indication (C & I). The State would issue necessary guidelines to put in place a monitoring mechanism to regulate compliance of management/working plan prescriptions.

4.2.3 In order to meet the growing need of people for essential goods and services that the forest provide, it is necessary to enhance the forest cover in forest deficient districts and enrich the bio-diversity of the existing forests through appropriate scientific and technical inputs.

4.2.4 No exotic species would be introduced through public or private source; unless long term scientific trials undertaken by specialists in ecology, forestry, sociology and agriculture have established that they are suitable and would have no adverse impact on indigenous vegetation, ecology and bio-cultural environment of the State.

4.2.5 Joint Forest Management (J.F.M.) practices would form the basis of forest management in the State. Necessary provisions would be made in the Working Plans/ Management Plans for participation of forest fringe dwellers.

The abundant potential of people living in rural and forests areas would be tapped for sound participatory forest management. Efforts would be made to facilitate assistance from financial institutions to the forest dwellers engaged in forest based economic activities for furthering for mitigating their plight to the extent possible.

4.2.6 There is an increasing emphasis on greater stake of communities in forest management and benefit sharing. Joint Forest Management has to graduate to Community Forest Management (C.F.M.) aiming at Sustainable Forest Management (S.F.M.). The Forest Department shall initiate steps to upgrade the JFM Cell to SFM Cell.

4.2.7 The Autonomous Council Forests and the forest areas owned by community and private individuals shall also be managed under the same policy as laid down above for the State Forests.

Forests in the area covered by the Sixth Schedule of the Constitution namely, Karbi Anglong Autonomous Council, North Cachar Hills Autonomous Council and Bodoland Territorial Council (hereinafter mentioned in Councils) are located in geographically, geomorphologically and ecologically fragile and sensitive areas and provide a back drop to the plains of the Brahmaputra and Barak Valleys. Viewed in this context, management of forest areas in these areas attracts considerable significance.

It shall be the endeavour of the State Government to seek co-operation and involvement of the Council authorities in framing measures to avert any possible and anticipated adverse impact on-

- (a) the vulnerable areas in the plains of the Brahmaputra and Barak Valleys prone to inundation and other natural calamities;
- (b) generation of adverse market forces due to incompatible market prices vis-a-vis royalty rates;
- (c) large scale diversion of forest areas for non-forestry purposes.

Emphasis needs to be laid on enrichment of the total forest areas to maximize the benefits as acquired from large compact forest against the demerits of fragmented forest areas including conservation of bio-diversity both flora and fauna of the region as a whole, without infringement or curtailment of rights and legal status vested upon the Councils by the Constitution.

4.3 Forest Protection :

Forests being an open access resource are vulnerable to various kind of pressures, like (a) encroachment; (b) illicit felling and smuggling of timber; (c) fire; (d) grazing, (e) shifting cultivations etc.

4.3.1 Encroachment :

Encroachment is one of the main causes of depletion of valuable forests in Assam. The encroachment of forest land is mainly for the following reasons:

Rehabilitation of flood and erosion affected people in the forest land for settlement in the past as well as aggressive and organized group encroachment under compulsion of such vagaries.

Heavy biotic pressures on the Reserved Forests due to high growth rate in population.

Inter-state boundary disputes with the neighbouring States, like Nagaland, Mizoram, Meghalaya , Arunachal Pradesh .

4.3.1.1 Government of Assam shall endeavor to identify pre-1980 encroachers who were allowed to enter the forest area by any competent authority, with a view to finding a solution to their land related problems.

4.3.1.2. The encroachers who belong to the ethnic communities of Assam and who have traditionally and characteristically dependent on the forests would be motivated to join the forest protection activities as economic stakeholders . Providing sustainable livelihood support to the people who live in the fringe villages would be a major thrust activity of the forest department so that fringe villagers would work as real protectors of forests.

4.3.1.3 Action Plan would be formulated for demarcation and consolidation of reserved forest boundaries by permanent measures.

4.3.1.4 These areas would be treated as People's Protected Area (PPA.) inside forests where the settlers create community assets of forest along with the services require for their livelihood. These P.P.A. shall act as people's pool of asset for strengthening livelihood security of forest dwellers.

4.3.1.5 The Government of Assam in Forest Department shall also take necessary steps to convert the Forest Villages to Revenue Villages as per the guidelines of the Ministry of Environment and Forests, Govt. of India.

4.3.2. Illicit felling of trees in -forest and smuggling of timber:

4.3.2.1. The Forest Department with involvement of people would endeavour to meet the basic demands of people from the factory sector by providing legal and bonafide avenues so that illegalities do not thrive.

Protection mechanism would be strengthened by involving local people through village level Joint Forest Management Committees. These Committees would be empowered and provide special incentives to prevent forest offences.

4.3.2.2. Forest officers would be well equipped to prevent/ detect/ investigate forest offences with all logistic support.

4.3.2.3. For tackling the crimes and criminals of forest offences, forest officers would be provided with adequate legal powers.

4.3.2.4. The Assam Forest Protection Force (AFPF), would be modernized with proper training and arms.

4.3.2.5. Steps would be taken for establishment of Special Courts at the district level for quick disposal of forest offence cases. The proposal for establishment of Green Bench in Gauhati High Court would also be pursued for swifter and judicious disposal of environment related cases.

4.3.3. Forest Fire :

The incidence of forest fire in the State of Assam is not so much pronounced but the same causes considerable damage in plantation and regeneration areas. Special precautions would be taken during the fire season. Improved and modern management practices would be adopted to deal with the forest fires. Community association in fire management will be strengthened.

4.3.3.1. The grass land management technique by artificial firing as practiced inside the Wild life Protected Areas such as Kaziranga would be scientifically appraised for protection of flora and faunal diversity.

4.3.4 Illegal grazing in forests :

Grazing in forest areas would be regulated by raising awareness in the communities and with their active involvement. Special conservation areas, young plantations and regeneration areas would be fully protected. Grazing and browsing in forest areas need to controlled. Adequate grazing regulation would be enacted to meet the genuine needed of the people while at the same time discouraging people in forest areas from maintaining large herds of under productive livestock.

4.3.5 Shifting cultivation :

One of the difficult problems in the gamut of shifting cultivation is to the 'Jhumias' away from this age old tradition recognizing the fact that Jhuming is an emotional heritage mainly with the Hill Tribes.

The integrated Area Development Programme (IADP) with due regard to local tradition and culture will be the mainstay in tacking the problem related to jhumming. This programme would aim at -

1. Raising awareness among the communities about the benefits of more sedentary land use systems.

2 Forest Development Works generating sustained employment ;

i. Containing jhumming through short term and long term project implementations and their constant and continuous monitoring, facilitating re-orientation and improvement of the initial project parameters to suit the local requirements.

ii. Rehabilitation of shifting cultivation sites through innovative community based reforestation in forest areas . Agro-forestry schemes with a significant input of horticulture and specifically approved cash crop cultivation on gentle slopes would be Introduced on affected community lands. The Nodal agency would be the Forest Department to ensure primary of rehabilitation and conservation.

4.4 Right and concessions :

4.4.1 Rights and concessions including grazing should always remain related to the carrying capacity of the forests. The capacity itself would be optimized by increased investment, silvicultural research and appropriate interventions. Stall feeding of cattle would be encouraged. The requirements of the community, which cannot be fulfilled by the rights and concessions so determined, would be met by development of Social Forestry outside the reserved forests.

The holders of customary rights and concessions in forest areas would be motivated to associate themselves with the protection and development of forests from which they derive benefits. The rights and concessions from forests would primarily be for the bonafide use of the communities living within and around forest areas, especially, the tribals, scheduled caste and other indigenous communities.

4.5 Management of Bamboo and Canes :

4.5.1 Bamboo being a multipurpose, eco-friendly crop abundantly available, yet an under-utilized natural resource, needs to be managed and exploited for sustainable use. Bamboo is conceived as the thrust area in the industrial development of Assam and for economic and ecological security of people. This precious resource needs to be fully tapped as an industrial raw materials, as substitute for wood in rural/urban housing, engineering works, handicrafts, furniture through appropriate value addition aimed at meeting national and international markets. Undoubtedly bamboo can revolutionise the economy of the State ensuring employment opportunities to a large number of people, Extension and awareness about bamboo sector development will be given renewed thrust.

4.5.2 Conversion of bamboo diversity, germ-plasm, sustainable management and use of dedicated bamboo forest and promoting bamboo cultivation in homesteads are the key-trust areas of Bamboo Policy of Assam.

4.5.3 To enhance the productivity in bamboo sector, improved planting stock would be developed through application and extension of modern techniques both within the Forest Department and to the communities.

4.5.4 Forward and backward linkages between bamboo growers and bamboo enterprise, industry and craft centers should be established to boost bamboo trade, industry and marketing within and outside the State.

4.5.5 Harvesting of bamboo for paper mills would be properly monitored and silvicultural practices would be strictly followed. Such industries would be asked to procure atleast half of their requirement from village communities, which will encourage them to grow more bamboo and also help their economic upliftment. For all industrial use, the pricing would be done judiciously.

4.5.6 Appropriate interventions and association with NGOs working in the sector for introducing modern technology catering to the current market requirements and imparting necessary training to the local people of the State for optimum utilization of the returns from this invaluable resource of Assam.

4.5.7 Canes are now in a very dwindling state in Assam because of large scale conversion of cane bearing areas or cane brakes to paddy fields both in and outside the forest. The most important species of cane (rattans) available in Assam are- (1) Jati/Hill Jati (*Calamus tenuis*); (2) Tita/Rangi (*Calamus leptospadix*); (3) Raidang(*Calamus flagellum*); (4) Oyahing; (5) Lejai (*Calamus floribundus*); (6) Jeng (*Calamus erectus*); (7) Golla (*Daemonorops jenkinsiannus*); (8) Huka (*Calamus latifolius*); (9) Sundi (*Calamus guruba*).

4.5.8 Joint Forest Management Committees are to be involved in propagation and expansion of cane plantations in suitable areas- With proper value addition and market linkages canes would be transformed as the most important raw materials for the cottage industries specialized in handicraft and furniture.

4.6 Agar wood Plantation

Sanchi plant or Agar or Agar wood is one of the precious gift of Nature to Assam being deeply associated with the cultural heritage of our state since ancient times. The soil and climate conditions of Assam are most suited for large scale Agar wood plantation. The Agar wood oil of Assam enjoys an international Brand Equity. As every state or region must have a mission for socio-economic development of the people utilizing potential resources, Agar wood or *Aquilaria agallocha* Roxb, has been identified as the most potential species of wood which can generate large scale income and employment for the people of Assam.

4.6.1 The Government would take measures for in-situ and ex-situ conservation and development of Agar wood as a cash crop for large scale cultivation (plantation) by the people.

4.6.2 As Agarwood grows abundantly and regeneration of this plant in Assam is very easy because of suitable climate and soil conditions, the restrictions put by various fora describing Agar wood as one of the endangered species need to be reviewed. The Government shall take measures to create conducive atmosphere for cultivation and utilization of Agar tree followed by trade of agar oil/derivatives by reviewing existing provisions with appropriate authorities so that optimum returns are forth-coming to the people of Assam.

4.7 Non Timber Forest Products (NTFP)

4.7.1 Rich flora of Assam yields various N.T.E.Ps, a list of which is at Appendix –I. Endeavour shall be made to conserve and increase productivity of forest with regard to these NTFPs. Screening of Non-Conventional NTFP shall be carried out.

4.7.2 Government of Assam Shall enact suitable policies endowing ownership rights of Minor Forest Produce to the JFMCs taking e following points into consideration.

Minor Forest Produce (M.F.P), now more appropriately rephrased as Non Timber Forest Produce (NTFP) covers species which can be harvested on nondestructive basis and shall not include minerals and wild animals or their derivatives.

Protected Areas, Biosphere Reserves and the refractory areas in high hills would not be used for harvesting NTFP as it would contravene the provisions of The Wildlife (Protection) Act, 1972.

Rights of ownership of NTFPs, to JFMCs may be exercised in a regulated manner with advice of Forest Department so that germ plasma is not subjected to irreparable damage and the usufructs are available on a sustainable basis. JFMCs especially the women would be encouraged to take up cultivation of selected NTFPs for commercial use, leaving the resource base in the Reserve Forests intact for conservation purposes.

4.7.3 Since the time, people realized the preventive and curative properties of the invaluable medicinal plants, they started using them for their health care. In view of the richness of medicinal and herbal plants in the State, a mechanism shall be developed for in-situ and ex-situ conservation, domestication and sustainable harvesting with active association of local people including traditional healers and local Bej/Baidyas to give due importance to the traditional systems of medicine of Assam. The socio-cultural, spiritual and medicinal areas of local populace, particularly the tribal would form the backbone of community based conservation and utilization of medicinal and herbal plants.

4.8 Bio-diversity Conservation Strategy :

4.8.1 Status of Bio-diversity in Assam.

Plant Diversity :

The State of Assam represents the transition zone between the India, Indo-Malayan and Indo-Chinese biogeographical region. It is, therefore, considered as one of the most biologically diverse areas in the whole of South Asia. The vegetation of Assam is primarily of tropical type covering areas of evergreen, semi-evergreen, deciduous forests and grasslands. There are 3,017 species of flowering plants, a good number of medicinal plants including several rare, endangered and endemic species. The state is also rich in Bamboo and Cane diversity have 10 genera and 42 species of bamboo and 14 species of cane. About 192 species of orchids are distributed in the plains and hilly areas of the state. A large part of Assam is covered by wetlands rich in both flowering and non-flowering plants. As many as 102 species belonging to 75 genera are considered to be endemic.

Animal Diversity :

In Assam, the forests are extremely rich and diverse with wide varieties of primates, carnivores, herbivores and birds, about 190 species of mammals and more than 800 species and subspecies of birds are so far reported from Assam. The Wildlife areas of the state house nearly 44 types of endangered and rare species of mammals and 14 types of reptiles and amphibia. Altogether around 230 forms of mammals including species and sub species have been recorded so far from Assam. There are 9 species of primates in Assam, which also includes the only ape of India, the Hoolock gibbon (*Hylobates hoolock*). As many as 8 cat species are found in the state. Moreover, Assam holds the entire known world population of Pygmy hog (*Sus salvanius*), 75% of the world population of the Indian rhinoceros (*Rhinoceros unicornis*) and wild Water buffalo (*Bubalus bubalis*) and a sizeable population of Asian elephant (*Elephas maximus*) and tigers (*Panthera tigris*).

Diversified habitats and various ecological associations have significantly enriched the avian diversity in Assam with more than 800 avian species. The State represents 53.5% of total birds species of Indian sub-continent. The White Winged Wood Duck (*Cairina sculalata*) and Bengal florican (*Eupodotis bengalensis*) are two of the noteworthy endangered species.

Reptiles constitute an important vertebrate group. Assam with its varied topography and habitat types supports a species rich reptilian fauna. Members of three living orders, namely, Crocodylia (Crocodiles & Gharials), Chelonia (Turtles & Tortoises) and Squamata (Snakes and Lizards) are found in the state. The records of reptilian resource of Assam show the presence of 2 species of crocodylia, 19 species of Chelonia and 77 species of Squamatas. Assam has diverse amphibian fauna too, so far 185 species belonging to 98 genera under 34 families being recorded. This group has 33 representatives endemic to the region-25 species of fish have been identified as threatened.

The fresh water molluscs constitute an important part of the ecosystem. In Assam, 10 species of fresh water snails are used as food by different tribal communities. The family Thiariadae has the highest number (10) of species but the family Planorbidae, Archatinidae, Bithyniidae, Cyclophoridae, Ariophantidae and Unionidae have the lowest number (1) of species.

In India about 1,500 species of butterflies have been identified so far and amongst these about 50% species are reported from Assam.

The cultivated lands of Assam harbors large varieties of useful microbes. The nitrogen-fixing bacteria and blue-green algae are abundant in the soils of the State.

4.8.2 The activities related to management of Bio-diversity shall have the three basic goals-

- a) Conservation of bio-diversity.
- b) Sustainable use of biological resources and
- c) Equity in conservation and use.

Protection, conservation and management of bio diversity shall also aim at both (a) ecological security and (b) livelihood security.

(a) Ecological security refers to the maintenance of the diversity of eco-systems and habitats; the activity of species/sub-species/varieties, population and communities ; the interaction between species, population, communities and their habitats and ecosystems; their integrity including biological productivity of eco-system and taxa; the evolutionary potential of natural system and critical eco-system service.

The policy of the state is to make and promote efforts for protection, conservation and management of bio-diversity through maintenance of critical eco-system including Ecologically Sensitive Areas (E.S.As), Ramsay Sites, Heritage Sites, Biosphere Reserves, Medicinal Plants Conservation Area, Gene Conservation Centre etc.

(b) Livelihood security refers to the security of human communities and individuals critically dependent on biological resources including guaranteed access to and control over such biological resources and related knowledge.

(c) The status of forests with regards to its ecological functions and role in livelihood security of the people would be monitored and evaluated.

4.8.3 Wildlife Conservation.

4.8.3.1 Protected Area Network (P.A.N) including National Parks, Wildlife Sanctuaries, Conservation Reserves and Community Reserves would be enlarged to at least 5 percent of the geographical area of the State. Special management plans will be drawn up for protection and habitat restoration.

4.8.3.2 Wetlands being the areas supporting highest level of biodiversity would be identified and brought under P.A.N. prescribing efficient management plans. The wetlands which are under heavy human use and at the same time very important for biodiversity and which could be included in P.A.N will be covered by a separate agency, which may be called the "Wetland Development Agency".

4.8.3.3 State would persistently strive to improve the status of wildlife by augmenting vigilance mechanism both through Govt. functionaries and cooperation of communities to curb poaching and illegal traffic of wildlife and wildlife products.

4.8.3.4 Action Plan for protection and management of wildlife in multiple use areas shall be drawn up. N.G.Os., National and State Institutes will be called upon to associate in the sphere of wildlife education, interpretation and generation of public support for ensuring better protection and management of protected areas.

4.8.3.5 Action plan for identification, classification and listing of endangered and threatened species of plants and animals will be drawn up with an aim for their rehabilitation, development and preservation. Herbarium may be established at suitable sites for taxonomic studies

4.8.3.6 Research and monitoring activities would be geared up to keep pace with global efforts to meet site specific requirements of wildlife management. High priority to ethno-biological research involving plants and animals as well as their derivatives would be ensured and endeavour would be made for identification of useful species.

4.8.3.7 Studies on ecological risks in the important wildlife habitat including the PAs be made mandatory after a period of 3 - 5 years. Knowledge of the ecological sensitivity of the habitats can save resources or accelerate the expenditure of the limited resources towards critical areas.

4.8.3.8 Eco-development works will be encouraged around the protected areas to reduce dependency of the people on forests and forest products and generate a friendly attitude among the communities on appreciation of the need for preservation, protection and conservation of the protected areas in general and the flora and fauna in particular.

4.8.3.9 Man-animal conflict resolution mechanism will be evolved through innovative preventive measures, education, more effective compensation schemes, insurance scheme and so on.

4.8.3.10 Ensuring viability of small sized protected areas through compatible buffer zones and dispersal corridors. This would call for adjustment in forestry operations to take care of the bio-diversity. Man-animal conflicts shall be resolved through appropriate measures in the tension zones.

4.8.3.11 The State Government shall also give importance to establishment of wildlife rehabilitation centre for temporarily disadvantaged wildlife saved by people.

4.8.4 Bio-cultural Diversity Conservation :

The diverse ethnic groups of Assam have mosaic of traditions and culture, which are intrinsically associated with the biological diversity of the state. To protect and promote the bio-cultural diversity of the State, Government of Assam has declared the famous One Horned Rhino as the 'State animal', extremely rare White Winged Wood Duck as the 'State Bird', magnificent Hollong tree as the 'State Tree' and the beautiful Kopouphool, an orchid as the 'State Flower'. The Government shall further endeavour to encourage preservation of bio-cultural diversity of the State.

This diversity shall be preserved through action as under –

I. Intensification of survey and inventurisation of bio-cultural resources of the various parts of the State will be carried out. The survey will include information on the distribution pattern of various species/population/community and the status of ethno-biologically important groups.

II. Legal and administrative measures shall be taken for the protection of the State's bio-cultural diversity against bio-piracy

and/or sustainable use of plants and animal genetic resources. Intellectual property rights (I.P.R) of the people of the State, specially the tribal shall be well guarded. Domesticated species/ varieties of plants and animals shall be conserved as an integral part of the State's rich genetic diversity.

III. The various ethnic groups of the State, having rich cultural tradition and practices, living in the fringes of the forests and their age-old relationship with the forests shall be studied and strengthened to be used as a tool for conservation and preservation of the forests for the benefit of the indigenous people.

IV The Traditional Knowledge (TK) and the Traditional Ecological Knowledge (TEK) systems shall be studied, documented and acknowledged, in conformity with India's commitment to the Convention on Biological Diversity.

4.8.4.1 Silvi-Muga Culture :

In Assamese culture, muga is intrinsically associated with our dresses and costumes. Muga occupies a respectable birth in famous Bihu song "Atikoi Seneher Mugare Muhura Production of muga, (sericulture) is practiced on host trees like Som, Hoanlo, Mejankari etc. These tree species shall be promoted for plantation in homesteads, wasteland to give a boost to muga production, silvi-muga culture-proving a boon to the Joint Forest Management Programme.

4.8.4.2 In-vitro and ex situ propagaanda of orchids for commercial exploitation:

"Bohag", the first month of the Assamese calendar brings thrill the Assamese folk, particularly the women. This is the season for "Kapou Phool", an orchid (*Rhyncostylus retusa*) declared the State flower by Govt. of Assam Orchids are the most beautiful and wondrous among the flowering plants of the world and have the potential of forming the basis of a lucrative industry in international markets. Orchids occur in diverse agro-climatic conditions in Assam indicating the potential of growing wide variety of orchids on a commercial basis through intervention from biotechnology. The strategy for conservation and propagation of orchids includes :

- a) A pilot project for Agro-technological development from lab to field for orchid and other cut flower production in Assam is to be established.
- b) To use the Agro-technological development park for generation of data with enormous practical and scientific utility to enhance the knowledge with regard to orchids particularly the threatened and high valued species.
- c) Development and demonstration of commercial exploitation to interested groups to contribute towards socio-economic development.
- d) Dissemination of information on orchids to bring awareness among people regarding importance of orchids in commerce in the national and international market.
- e) Transfer of technology for ex-situ conservation through cultivation of orchids by entrepreneurs.
- f) Development of gene bank for endangered species found in this part of the country.

4.9 Afforestation, Social Forestry and Farm Forestry.

4.9.1 A massive need based and time bound programme of afforestation and tree planting with particular emphasis on small timber, fuel-wood and fodder development would be initiated on all degraded and denuded lands in the State, whether forest or non-forest land.

4.9.2 The Eco-Task Force is envisaged to be-constituted under the Territorial Army Act, 1984 assisted by the local unemployed youth would be most suited for carrying out the massive afforestation work for re-greening the fragile Bhabar tract at the foot hills of Himalayas under hostile condition.

4.9.3 To encourage planting of trees along sides of roads, embankments, railway lines, rivers, streams, canals and other fallow lands under State/ Corporate, Institutional or private ownership. Green belts would be raised in urban/industrial areas to check population and improve the micro-climate with the assistance of NGOs, private, educational institutions and corporate sector.

4.9.4 Village and community lands or any other such lands not required for other productive uses, would be taken up for development of tree crops and fodder resources. Technical guidance necessary for initiating such programmes would be provided. The revenue generated through such programmes shall deposited to the respective JFMCs, where the lands are vested in them; in all other cases, such revenue would be shared with the local communities in order to provide an incentive to them. The vesting, in individuals, particularly from the weaker sections (e.g. landless labour, small and marginal farmers, schedule castes, schedule tribes and women) in general, certain ownership rights over trees in these areas, would be considered subject to appropriate regulation, beneficiaries being entitled to usufruct and in turn be responsible for their protection and maintenance.

4.9.5 Land laws and the pricing structure of forest products would be so modified and standardized so as to facilitate and motivate individuals and institutions to undertake tree-farming and growing of fodder plants, grasses, legumes and fuel wood on their own land. Whenever possible, degraded lands would be made available for the purpose to JFMCs on terms of usufruct benefits so as to make each Committee self reliant.

4.9.6 Laws relating to harvesting of trees from private lands would be reviewed with a view to encourage the growers to

undertake such plantations with more zeal.

4.9.7 Suitable market linkages shall be developed for disposal of the non-wood forest products (N-WEPs) at remunerative prices, which would act as an incentive to tribal and other rural folk in taking positive interest in growing such crops.

4.10.9 Production of Biomass.

For the vast majority of the people in the State, the foremost need is fuel wood, timber, fodder and fibre. The issue of enhanced production and sustainable resource utilization would therefore be prioritized to meet the needs of the rural people.

4.10.9.1 The microplans dovetailed with working plan prescriptions would guide the production of the biomass. Fuel-wood plantations and agro forestry would be encouraged on community lands. Necessary steps to promote efficient conversion and utilization of timber would be promoted for maximization of resources use.

4.10.9.2 Promotion of alternative sources of domestic energy would be taken up to reduce pressure on the forests. Use of non-conventional sources of energy would also be encouraged in a big way.

4.11 Wood based industry -

In accordance with the directives of the Hon'ble Supreme Court of India, the Government of Assam would like to work for a perfect equilibrium between conservation and developmental activities. Following a scientific sustainable Forest Management Model, the Govt. of Assam would also like to encourage wood based industries wherever possible. Establishment of forest based industries and supply of raw materials would be as follows :

4.11.1 All wood based industries would be located within approved industrial estates.

4.11.2 The wood based industries would be encouraged to raise their own captive plantations or alternately try to procure raw materials from JFM community forests or private plantations.

4.11.3 Government would encourage import of wood for the wood based industries with suitable fiscal incentives.

4.11.4 Forest based industries would be encouraged to raise their own plantations for the raw materials needed for meeting their requirements or support individuals/communities to grow the raw materials with inputs including credit, technical advice, harvesting and transport services. Farmers, particularly, small and marginal farmers would be motivated to grow on marginal/ degraded land available with them, wood species required for industries. The industries would undertake purchase of the outturn after a fixed number of years at a minimum prefixed price capable of attracting growers.

4.11.5 The prescribed annual harvest from the State Forests as per the microplan and Working Plan/ Management Plan prescription shall first serve the bonafide domestic requirements of the fringe dwellers. The surplus only shall be made available to the industry.

4.11.6 Forest based industries must not only provide employment to the local people on priority but also involve them fully in raising trees and raw materials.

4.12 Eco-Tourism :

Creating conducive atmosphere and facilitate for development of Eco- Tourism in the state is considered a major thrust of the new forest policy of Assam. Ecotourism that utilizes the forest scenic spots as well as the opportunities provided by the Protected Areas for wildlife viewing are to be seen as a community based conservation activity. This activity would in addition be promoted as a revenue generating mechanism to benefit the rural communities through their active involvement along with employment opportunities in various sectors, like tour operator guide, hotel and restaurant, boating sites, bio-mass based crafts and enterprises etc.

4.12.1 Consistent with the National Eco-Tourism Policy and Guidelines (1998), the National Policy for Tourism, 2002 and the National Wildlife Action Plan (2002-2016), the following steps will be taken on priority for development of Eco-Tourism in the State.

1. Set up an Assam State Ecotourism Board/Authority/ Corporation that will plan, regulate, and fund tourism activities in different parts of the state specially in Protected Areas and Scenic spots in Reserve Forests and outside.
2. Develop tourism management plan in Protected areas in the State.
3. Put in place the stringent standards of waste disposal energy and water consumption, construction plans and materials used therein.
4. Develop impact assessment techniques and standards to evaluate negative impacts of tourism on soil, water resources, vegetation, animal life, sanitation or waste disposal, and cultural environment.
5. Conduct orientation programme for tour operators and take up study of carrying capacity for most visited PAs.

4.12.2 Forest Development Agencies (ED. As) constituted in Wildlife areas, which is the co-ordination of Eco-Development Committees would be the implementing agency with State Tourism Development Corporation/ Tourism Department/Forest Department of the state assuring supportive and supervisory roles.

4.12.3 The Forest Department would expand and revamp its own facilities for the development of Eco-Tourism all over Assam.

4.13 Marketing, Supply and Utilization of Forest Produces :

The State Government would make all endeavours to utilize the forest produces efficiently and extract maximum economic return from the forest produces in the form of income to the stake holders and revenue to the State Exchequer. The State shall take appropriate measures for procurement, marketing and supply of forest produces to serve the social obligation.

4.13.1 Marketing and Supply of Timber from State Forests :

(a) The State Government shall arrange for proper marketing and supply of timber to achieve maximum economic return from the available resources. The existing administrative setup of the Assam Forest Department shall be re-organized constituting a full-fledged Marketing Wing upgrading the office of the Forest Utilization Officer of the state. The Forest Department shall evolve such measures as to make the marketing of forest produce simpler and hassle free. The Marketing Wing would in addition, also study and establish linkages for the important N.T.F.Ps. for increasing the association of and benefits accruing to the JFMC and its members.

(b) The Government shall promote education and training to the farmers, tribal and others involved in the growing of forest species on value -addition of timber and non timber products, use by various industries, market price, market preference, etc. and shall forecast the minimum prices of the forest products in the market analyzing its supply and demand scenario.

4.13.2 Marketing of wood from Agro Forestry and Commercial Plantations :

(a) The Assam Forest Department shall promote education to the farmers on use of timber by various industries, market prices, various sizes of timbers preferred by users, value addition by proper processing and treatment, etc. These efforts would include use of Radio and T.V. and other media on a large scale as is done for agricultural crops. Whenever possible, the Government shall make reliable forecasts of minimum wood price available to the farmers.

(b) The Government in order to check the slump in the market shall encourage commercial and industrial enterprises to offer a minimum support or guaranteed price for the wood produced by farmers and other tree growers and also take steps so that State owned forests do not compete with farm forestry.

(c) The Government shall encourage the private sector and where appropriate, make arrangement for the public sector entities to make quality-planting materials available to farmers and other tree growers.

4.13.3 Marketing of Non-Timber Forest Produces (N.T.FPs):

(a) The Government shall foster steps to improve the bargaining position of local N.T.F.P. collectors by developing the capacity of JFMCs. These steps would include (a) increasing the knowledge and awareness of prices, quality differentials, purchaser preferences and possible marketing channels (b) increasing value addition to various forest based products and (c) developing financial and management capacities through training and arrangements to establish revolving funds, etc. Depending on costs and benefits analysis of possible options specific to various sites and products, steps might also include participation of committees and/or co-operatives in N.T.F.P processing and/or marketing.

(b) The Government shall sponsor research to better understand N.T.F.P marketing chains and identify potential reforms affecting competition among market agents and processors, transparency and availability of information, market linkages, value addition (e.g. collection technologies, processing, packaging), consumer demand, contract arrangements, etc. that would increase returns to N.T.F.P collectors, especially those who are participating in forest management. The Government shall also sponsor research to analyze the environmental and economic sustainability of N.T.F.P. supplies, market demands and harvesting levels to make for a sustainable system.

4.13.4 Trade implications and Forest Certification:

One of the major implications of Sustainable Forest Management is in terms of International trade. For trade in international market, it would be necessary to certify the products for their origin from sustainability-managed forests. Export items from India basically have rural origin with little or no quality control. Among the major products exported under this category are - Bamboo products, Cane products, handicrafts and N.T.F.Ps. Importers always insisting on certification of these products. Thus, forest certification will promote these products and at the same time will also result in higher economic returns.

The State of Assam has advantage of processing a very rich variety of commercially useful medicinal plants and other non-timber forest products. It also has abundant bamboo and other resources and dependant artisans capable of producing exportable items. Most of these are in terms of cottage industries employing thousands of rural people, skilled persons and artisans. With western importers of these products insisting on certification, the State Forest Department shall initiate a Forest Certification Process keeping in view global requirements.

4.13.5 Social obligation of meeting the local demand:

The Forest Department shall work out the estimated outturn of timber and forest produces annually from the building permission issued by the Municipal Authority and other local bodies and try to meet the demand of local needs on no loss no profit basis by installing Consumer Depots at District and Sub Division Headquarters.

4.13.6 Wood substitution and preservation:

More emphasis shall be given on wood substitution and efficient utilization of wood. In all government construction, use of timber shall be minimized by maximizing wood substitution.

Local entrepreneurs shall be encouraged to set up timber treatment plants for increasing the durability of nondurable timbers to reduce the consumption of traditionally used species.

4.14 Forests and Tribal.

The 10th Plan Approach Paper, 2002 of Government of India narrates the unresolved issues in tribal development as below -

" From the view point of policy, it is important to understand that tribal communities are vulnerable not only because they are poor, asset-less and illiterate compared to the general population; often their distinct vulnerability arises from their inability to negotiate and cope with the process of integration with the mainstream economy, society, cultural and political system, from which they were historically protected as the result of their relative isolation. Post independence, the requirement of planned development brought with them the specter of dams, mines, industries and roads on tribal lands. With these came and concomitant process of displacement, both literal and metaphorical — as tribal institutions and practices were forced into uneasy existence with or gave way to market or formal state institutions (most significantly, in the legal sphere), tribal found themselves at a profound disadvantage with respect to the influx of better-equipped outsiders into tribal areas. The repercussions for the already fragile socio economic livelihood base of the tribal were devastating —ranging from loss of livelihoods, land alienation on a vast scale, to hereditary bondage.

As tribal grapple with these tragic consequences, the small clutch of bureaucratic programmes has done little to arrest the precipitous pauperization, exploitation and disintegration of tribal communities. Tribal respond occasionally with anger and assertion, but more often in anomie and despair, because the following persistent problems have by and large remained unattended to :

- Land alienation and their non restoration
- Indebtedness
- Tribal Forest Rights, Development of Forest Villagers and Shifting Cultivators.
- Involuntary displacement due to development projects and lack of proper rehabilitation.
- Rehabilitation of displaced and disabled tribal.
- Survival, protection and development of the Primitive Tribal Groups.
- Effective and meaningful implementation of strategy of Tribal Sub plan.

To tackle the various unresolved problems of the tribal, the Tenth Plan shall formulate a comprehensive National Policy for Empowering Tribal through their integrated development, which will lay down the responsibilities of the different wings of Government with appropriate accountability".

Therefore, the policy of the State emphasizes that while safeguarding the customary rights and interests of tribal and scheduled caste people living within or in vicinity of forests, forestry programmes would pay special attention to the following :

Having regard to the symbiotic relationship between the tribal people and forests, a primary task of all agencies responsible for Forest Management would be to associate the tribal people closely as partners in management, protection, regeneration and development of forests as well as to provide gainful employment to people living in and around forests.

Protection, regeneration and optimum collection of NTFP along with institutional arrangements for marketing of such produces.

Such economic activities shall have linkage with State Bio-diversity Action Plan.

The contractors system of the Forest Department would be replaced by institution such as tribal village councils and other institutions, tribal co-operative, labour co-operative etc. This task is envisaged to be executed through the involvement and empowerment of JFMCs.

To avoid the exploitation of the tribal, there would be proper market development, fixing of a minimum price for important forest produces and mechanism for dissemination of information.

Undertaking Integrated Area Development Programmes to meet the needs of tribal economy in and around forest areas including provision of alternatives sources of domestic energy on a subsidized basis to reduce pressure on existing forests.

Family oriented schemes for improving the status of the tribal beneficiaries, forest villagers in general and tribal and scheduled caste in particular.

Creation of a Forest Development Agency (FDA) for taking up integrated development of forest resources for alleviation of poverty among the tribal and other people dependant on forests.

The Forest Policy of Assam gives highest priority to the economic emancipation of the ethnic and tribal communities who live in the forest fringe areas and who would be the real protectors of the forests.

4.15 Forest Extension.

4.15.1 Forest conservation programmes shall remain a myth without active support and co-operation of the people. It is therefore, essential to inculcate in the people an awareness of the value of the trees, forests and wild life and their contribution towards not only a healthy environment but also towards their poverty alleviation. This may be achieved through involvement of educational institutions, right from the primary stage. Study of forests and environment would be included in school curricula. Teachers would be given orientation training on environmental protection and its impact on social life. Raising of fruit and other useful trees by the students on institutional land, their own homestead land and nearby degraded areas would be encouraged. State awards would be declared to felicitate the institutions doing best work in the sphere. Award of credits would be given to the students showing special interest in matters related to forestry and environment. Modalities would be worked out in consultation with the authorities of education department.

4.15.2 Farmers and interested people would be provided opportunities through institutions, like Krishi Vigyan Kendras, Trainers' Training Centres, Gram Sewak Training Centres and Forest Research Institutes to learn agrosilvicultural, Silvi-pastoral and Silvicultural techniques to ensure optimizing the productivity of their land and water resources. Short term extension courses and lectures would be organized to educate farmers and other interested persons.

4.15.3 Publicity and extension activities of the Forest department would be intensified. Suitable programmes would be propagated through mass media, audio-visual aids and extension machinery, which is essential for the purpose.

4.16 Forestry Education:

Study of forestry science has been considered as a part of environment study Government would endeavor recruiting forestry professionals of academic and professional excellence. Government would consider sponsoring larger number of forestry personal for attending specialized and orientation training for developing better management skills.

Institutes of Forestry Education of the State shall be upgraded and strengthened to take up multi-disciplinary short and medium term courses including on the job training in addition to regular programme.

4.17 Forestry Research:

With the increasing realization of the importance of forests for environmental health, energy and employment, emphasis is warranted on scientific forestry research necessitating adequate strengthening of the research base as well as new priority formulation. Some broad priority areas of research and development needing special attention are

- Increasing the productivity of timber and other forest produce per unit area per unit time through modern scientific and technological inputs.
- Re-vegetation of barren/marginal/waste/mined lands and watershed areas.
- Effective conservation and management of existing forest resources (mainly, natural forest eco-systems).
- Research related to social forestry and agroforestry for rural/ tribal development.
- Development of substitutes to replace wood and wood products.
- Research related to wildlife management in parks, sanctuaries, biosphere reserves as well as wildlife outside protected areas. Research priorities are to be identified as system level, community level and species level.
- Discovery of new indigenous species with hitherto unknown utility status.
- Research on marketing N.T.F.P.
- Research on processing and scope of developing cottage industry with N.T.F.P. for marketing value added products.
- Research related to tribal-forest interface including development of site specific viable models of rehabilitation of shifting cultivation lands .

For the above purposes linkage with universities and other institutions would be established.

4.18 Personal Management and Capacity Building

4.18 .1 Government policies in personal management for professional Foresters, while aiming at optimum utilization of their professional skill, would endeavour to enhance their status attracting qualified and motivated personal, keeping in view particularly the arduous nature of duties performed, often in remote and inhospitable areas. Posting of officers would be in keeping with their aptitude for specific assignments.

4.18.2 Government policy would be to recruit grass root level forest workers amongst people from rural areas, particularly living in vicinity of forests and not habituated to urban life, as far as practicable.

4.18.3 Service rules would be scrutinized and notified for different categories of forest employees.

4.18.4 Restructuring the Department with well defined duties and responsibilities at each level of the departmental functionaries.

4.19. Application of Information Technology:

4.19.1 Development of comprehensive database.

The present state of forest information is unsatisfactory in terms of availability, coverage, consistency and reliability.

There is urgent need for improving the forestry information base, with clear definition of scope, sources and acceptable standards of accuracy and efficiency in order to strengthen forestry planning process as well as implementation. A Geographic Information System (G.I.S) Cell will be established to inventorise, update and analyse the states natural resource base, its productivity and related issues G.I.S. and Global Positioning system (G.P.S) technologies have important applications in forestry. A full fledged G.I.S. Center for rapid adoption of these technologies have important applications in forestry, A full fledged GIS Centre for rapid adoption of these technologies into the planning, implementation and monitoring of forestry plans and schemes would be established. Forest Management Information System needs to be set up simultaneously to optimize human resource development in the Forest Department.

4.19.2 Promotion of Electronic Governance in forestry.

Electronic Governance (E- Governance), has assumed importance in all walks of life. Forest administration would be encouraged to maximize the use of e- technology in all its operation, especially that which pertains to public dealings. Forest Department has recognized the power of I.T. to act as catalyst in efficient governance and development of human resources. The policy of the department is to draw detail plan for improving transparency, providing information speedily to all citizens and improving administrative efficiency. Official web sites will be specially dedicated to promote E- Governance for the Assam Forest Department as a whole.

4.20 Legal support and Infrastructure Development:

Appropriate legislation would be undertaken supported by adequate infrastructure in order to implement the State Forest Policy effectively. Every effort would be made to frame Rules and Procedures within a reasonable period from the date of policy coming into force for its effective implementation. In addition legal literacy drives would be initiated to increase Knowledge base on environmental issues.

4.21 Diversion of forest land for non - forestry Purposes:

4.21.1 Forest land or land with tree cover would not be treated merely as a resource readily available to be utilized for various project and programmes but as a national asset which requires to be properly safeguarded for providing sustained benefits to the entire community. Diversion of forest land for non-forestry purposes would be subject to most careful examinations by specialists from the standpoint of social and environmental costs and benefits. Construction of dams and reservoirs, mining and industrial development and expansion of agriculture would be consistent with the needs for conservation of trees and forests. It would be mandatory for project's which involve such diversion to provide in their investment budget, fund for regeneration/compensatory afforestation.

4.21.2 User agencies who are allowed mining and quarrying in forest areas and in land covered by trees would be required to repair and re-vegetate the area in accordance with the established forestry practices in accordance with the Forest (Conservation) Act., 1980 and its amendments. No mining lease would be granted to any party, private or public, without a proper mine management plan appraised from the environmental angle and enforced by adequate machinery.

4.22 Monitoring and Policy Review

A High Power Committee shall be constituted to monitor the progress of the policy guidelines and to review the policy periodically so that essential policy directives are evolved further from time to time .

4.23 Financial support for forestry :

The objectives of this revised policy cannot be achieved without investment of financial and other resources on a substantially higher scale Considering the contribution of forests in maintaining essential ecological higher level of investment in forestry sector is the crying need of the day. To Government to strive to channelise the resources from its own diverse sources, central contribution and also from external sources through the Forest Department. Forest would not be looked upon as a source of revenue . Forests are a renewable natural resource . They are an asset to be protected and enhance for the well being of the people of Assam.

Working Plan prescriptions would be backed by financial commitment by the State Government. It must be ensured that a minimum level of funds (atleast 10 % for hills and 5% for plains) from State Plan resources are made available for the development and protection of forests of Assam.

A Partial List of N.T.E.P & Species available in Assam :

Appendix-I

1) Oil yielding plants :

- a) Oil from leaves - Chitronella grass , Patchouli Oil.
- b) Oil from seeds - Sal seed , Nahar seed , Karach Seed. Bhotera seed .
- c) Oil from, wood - Agar wood, Sandal wood
- d) Oil from flower - Nahar Flower, Champa flower, Keteki (Keora) flower , etc .
- e) Oil from fruit - Salmogra, Dalmogra .
- f) Oil from Rhizome- Gandhi/Gan-Kachu/Ganchena/ Sugandha Mantri.

2. Medicinal Plants :

- (a) Medicine from leaves — Neem , Vasak , Nayantara , Nephaphu , etc .
- (b) Medicine from bark — Ahoi, Arjuna, Ashoka, Chirota , Laham, Kaula. Bhatghila, Amora etc.
- (c) Medicines from roots — Sarpagandha, Keturi,Chukchini,
- (d) Medicines from seeds —Amlokhi , Hilikha , Bhoma Thekera , Makuri kendu , Bel .

3. Resins and .gums :

Sal Dhuna , Dhuna , Katera Gum from Odal

4. Kutch and Katha :

5. Charcoal :

6. Broom grass

7. Roofing materials: Thatches, Takoupat , Jengupat.

8. Matmaking: Patidoi and Kuhila.

9. Fruit trees : Jamun , Bogori , Thekera , Taportenga, Nagatenga , Miricatenga , Satkora etc.

10. Species : Dalchini , Pipali .

11. Vegetables : Dhekia , Katchu , Ma-sundari, Hoklati, Manimuni, Khutora, Jilmill, mati-kanduri, Kalmau, Tengechi, Narsinha.