GOVERNMENT OF NAGALAND

DEPARTMENT
OF
ENVIRONMENT, FOREST AND CLIMATE CHANGE

CONTENTS

STATE POLICY OF ENVIRONMENT AND FOREST 2015

1. BACKGROUND:

1.1 Geographical profile of the State: The State of Nagaland is bound by Assam in the north and west, by Myanmar and Arunachal Pradesh in the east and Manipur in the south. It lies between 25º 06′ and 27º 04′ N latitude and 93º 20′ and 95º 15′ E longitude. The geographical area of the State is 16,579 sq.km. which constitutes 0.5% of the country's geographical area. The whole State is hilly and is dominated by north-south parallel ranges. However, a small area bordering Assam is plain. The altitude varies from 194 m in the plains to 3800 m in the hills. The highest peak in the State is Saramati in Tuensang District at 3840 m. The average rainfall is 2500 mm. The State is endowed with a wide variety of forest types on account of its unique geographical location. The State comprises of 11 administrative districts with 52 Blocks and 1286 inhabited villages. Each district has generally predominance/concentration of one of the major/minor tribe of the State thereby making districts distinct in their linguistic, cultural, traditional and socio-political characteristics.

1.2 Demography: The population of the State is 1.98 million (2011 census), out of which rural population is 82.78% and urban population is 17.22%. The population density is 120 person per square km. The scheduled tribe population is 89.1%.

1.3 Socio-economic profile: The inhabitants of Nagaland are almost entirely tribal with distinctive dialects and cultural features. The people of the State practice shifting cultivation and are deeply associated with forests for their livelihood. Nagaland has a peculiar pattern of land ownership, in which land is owned either by the village community as a whole or by a clan within the village or by individuals. The customary laws are un-codified but are very effective. In the event of any dispute, the traditional village council is the arbitrater.

1.4 Land availability: Shifting cultivation is widely prevalent in the State. Most of the forest under the un-classed category are privately owned. The forest cover of the State is 12,966 sq. km. which is 78. 12 % of the geographical area. Very dense forest is 1296 sq km, moderately dense forest 4695 sq km and open forest is 6975 sq. km (FSI,SFR 2015). The state is having one National Park (Intanki National Park) spread over 20, 202 ha. It has four Wildlife Sanctuaries namely Rangapahar (470 ha), Puliebadze (923 ha),Fakim WLS (642 ha) and Singphan Wildlife Sanctuary(2357 ha). The total area under Protected Area network is 24,594 hectares constituting 1.48% of the total geographical area.

1.5 Land Resources of the State: Nagaland, though a small State in terms of area, has a rich and varied biodiversity owing to its varying physiographic and geo-climatic conditions favourable for luxuriant growth of vegetation. It varies from tropical rain forest to alpine vegetation and from evergreen forest to sub-tropical climatic vegetation. Nagaland is located

in one of the 25 hotspots of the world in terms of biodiversity. The State supports approximately 2,431 species belonging to 963 genera and 186 families under angiosperms. Gymnosperms also register their presence with 9 species, under 6 genera from 5 families. The faunal diversity in the State is also rich with rare birds and animals. There about 32 species of mammalian fauna, 65 species of avian fauna, 42 fish species belonging to 10 families and 24 genera, and 9 species of reptilian fauna. A few areas of the State are still pristine and harbor a wide variety of endemic species of plants, animals and micro-organisms. However, in recent times, the biodiversity of the State is facing serious threats due to increasing population, pressure to bring more areas under cultivation and other developmental activities.

1.6 **Vegetation** : The vegetation of Nagaland represents the transition zone between the Indian, Indo-Malayan, Indo-Chinese bio-geographic region as well as a meeting place of Himalayan Mountains with that of Peninsular India and therefore acts as a bio-geographic gateway. Many ancient angiosperms and primitive flowering plants are found here and therefore this area is considered as a cradle of flowering plants (Thakhtajan, 1969, Rao, 1994). Several groups of plants of Orchids, Rhododendrons, Ferns, Bamboos, Zingibers and Lichens have expressed their maximum diversity in this State. The State is also considered as one of the centers of origin of rice and secondary origin of citrus, chilly and maize. The State is also known to have a great treasure of medicinal plants, orchids, bamboos, canes, bryophytes and animal diversity.

1.7 Bamboo resources in the State: Bamboo is found extensively all over the State as a predominant plant in the foothill regions of Peren, Dimapur, Wokha, Mon and Mokokchung districts. It also occurs mixed with other forest species in other districts of the State. The State's bamboo resource accounts for 5% of the national bamboo resource which amounts to 0.0448 million hectares or 4,48,000 hectares. So far 46 species of bamboos have been reported from the State. The predominant species found are *Dendrocalamus hamiltonii, Bambusa tulda, Bambusa pallida, Schizostychum dullooa*. With the revival of Tuli Paper Mill and promotion of other bamboo enterprises the resource requirement of the State is estimated at 5 lakh MT per annum.

1.8 Biodiversity hot-spot areas identified in the State are Saramati, Helipong, Tizit Valley, Longkhum, Meinkong, Changikong, Mount Tiyi, Baghty Valley, Japfu, Shilloi Lake, Dzulekie, Janglangshu & Manaksha area, Akhunato area, Mount Pauna Range, Mount Kissa Range, Intangki NP, Fakim WLS and Singphan Wildlife Sanctuary.

1.9 Mineral resources: The State in rich in mineral deposits. Important mineral deposits in different region of the State include high grade lime stone, coal, chromium, copper, clay, slate, oil and natural gas, etc.

1.10 Rivers of the State: The rivers of Nagaland flow either into Brahmaputra in the west of Assam or into the Chindwin in the east in Myanmar. The Rivers that flow into the Brahmaputra are Dhansiri, Doyang, Tsurang, Milak, Dikhu, Tiru and Tizit and the rivers that flow into the Chindwin are Zungki, Likhimro, Lanye with their tributaries.

2. PREAMBLE

The state of Nagaland is known for its rich forest resources and is a part of Indo – Burma mega biodiversity hotspots of the world. With forest resources playing a major role in socio cultural and economic activities in the state, management of these resources in a sustainable manner in tune with the National Forest Policy assumes utmost importance. Forest resources in the state lay the foundation on which a sound economy and livelihood security can be ensured for the people of the state. Apart from the several tangible goods the forest provides, they are equally important in providing numerous intangible services. Considering the land holding pattern in the state, where the major portion of the forest resources are with the communities and the individuals, their involvement and participation in managing these resources forms a major strategy for evolving a scientifically sound and sustainable policy for future.

Article 371(A) ensures that "religious or social practices of the Nagas", "Naga customary law and procedure" and "ownership and transfer of land and its resources" is protected. Keeping in view this provision, the land and its resources should be protected, developed and managed sustainably.

The Directive Principles of State Policy as laid down in Article 48A of the Constitution of India, stipulates that the State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country. Article 51-A lays down the fundamental duty of every citizen to protect and improve the natural environment including the forests, lakes, rivers and wildlife and to have compassion for all living creatures.

The Hon'ble Supreme Court has held that forests are the asset of the people. It is the obligation of all concerned to conserve and not waste these resources. Any threat to ecology can lead to violation of the right to enjoyment of a healthy life guaranteed under Article 21 of the Constitution.

The National Forestry Commission has also recently recommended that each State shall have its own Forest Policy statement, for the sustainable management of its forest and wildlife resources. It should also have a mechanism to monitor implementation of forest policy provisions and suggest rectifications.

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. However, the forests in country have suffered serious depletion over the years. This can be attributed to the relentless pressure arising from ever increasing demand for fuel wood, fodder and timber, inadequacy of protection measures, diversion of forest land for non-forestry purposes without adequate compensatory afforestation & environmental safeguards and tendency to look upon forests as revenue earning resources.

The National Forest Policy, 1988 enunciated nine basic objectives, identifies five essentials of forest management and sets the strategy to attain the goal.

The North-Eastern region of India has a special status, and is known for its rich natural heritage. It is one of the 25 hot-spots recognized in the World with regard to its biodiversity & genetic resources.

Over the years, forests in the State have suffered serious depletion and degradation. This is attributed to ever increasing pressures on demand for jhum cultivation, fuel-wood and timber requirement and diversion of forest lands to non-forest uses. The need to review the situation and to evolve a conscious strategy for forest conservation has become imperative. Conservation requires rehabilitation of jhum, preservation, maintenance, sustainable utilization, restoration, and enhancement of the natural environment. It has thus become necessary to adopt a State Forest Policy on the line of the National Forest Policy.

As such, it is pertinent to review the situation and adopt new strategies of forest conservation which includes conservation, evaluation of management strategies for sustainable utilization, restoration, quantitative and qualitative improvement of stand composition and structure and overall enrichment of the environment.

Therefore, State Government resolves to adopt a new State Forest Policy with immediate effect.

3. BASIC OBJECTIVES:

3.1 The basic objectives that should govern the Nagaland Environment and Forest Policy are the following:

3.1.1 Maintenance of environmental stability through the preservation of forest resources of the state and wherever necessary, restoration of ecological balance which has been disturbed due to various pressures including developmental activities, faulty land use practices resulting in degradation of forest resources.

3.1.2 Conserving the natural heritage of the state through sustainable conservation and preservation of natural forests of the state with its diverse flora and fauna, natural heritage, which represents the remarkable diversity and genetic resource of the state for posterity.

3.1.3 Checking the denudation of forests and arresting soil erosion in catchment areas of the rivers and reservoirs for effective soil and water conservation and mitigation of floods and droughts. Promoting Rain Water Harvesting,recharging of water bodies, aquifers and reducing siltation of the reservoirs and water bodies.

3.1.4 Enhancing the quality of forest and tree cover in the state through afforestation, induced natural regeneration and appropriate management of the degraded forest and jhum land through the involvement of communities, use of their traditional knowledge and other efficient technologies.

3.1.5 Increasing productivity of land through improved management practices to meet the basic needs of food, timber, fuelwood and other commercial needs and maximizing substitution of wood, regulating the diversion of forests and productive agricultural lands to non forestry uses and prevent changes in landscape of natural forests in the interest of conservation .

3.1.6 Encouraging efficient utilisation of forest produce and maximising value addition to the timber and other non-timber forest produces including bamboo, cane, medicinal and aromatic plants within the state, backed by a fair and efficient Marketing Mechanism.

3.1.8 Generating awareness about biodiversity and wildlife conservation and encouraging vigorous community's involvement in the management and protection of biodiversity and wildlife in both government and community areas.

3.1.9 Encouraging and actively promoting the use of alternative energy such as new and renewable sources of energy for lighting, heating, cooking and other purposes

3.1.10 Promoting organic farming practices and efficient management of land under agriculture by controlling the use of chemicals thereby preventing the contamination of soil and pollution of water resources.

3.1.11 Efficient management of land under urban and village settlements to prevent landslides, floods and other natural calamities.Prevention of pollution of air and water especially in urban areas by regulating emission levels for vehicles, industries and other sources of pollution.

3.1.12 Promoting Ecotourism and other non consumptive uses of forests of high biodiversity value and natural areas of scenic beauty that would lead to the conservation of these areas, preservation of local cultural heritage and meet the social and economic needs of the local communities.

3.1.13 Promoting forestry Research, Education and Extension and encourage researchers/academic institutions to undertake quality research works on forest dynamics, conservation and its sustainable management.

3.1.14 Promoting better understanding of climate change, take appropriate measures for adaptation and mitigation, energy efficiency and natural resource conservation and to encourage certification of energy savings, carbon sequestration etc that could earn carbon credits in the global carbon market through Afforestation/Refforestation,Clean Development Mechanism , REDD+ and other viable options.

3.1.15 To ensure equitable access to natural resources and quality of life for all sections of society specially the marginalized poor communities that are most dependent on forests & natural resources for their livelihood.

4. ESSENTIALS OF FOREST AND ENVIRONMENT MANAGEMENT :

4.1 Existing forests shall be judiciously conserved and their productivity improved. Forest and vegetation cover should be maintained and where necessary, increased and improved particularly on hill slopes and in catchment areas of rivers, lakes and reservoirs.

4.2. National parks, sanctuaries, conservation reserves, biosphere reserves, community reserves, Community Conservation Areas, natural heritage and other protected areas should be strengthened and extended adequately and a network of such areas to be formed so as to enable conservation of the biological diversity and genetic resources of the state.

4.3 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. Community Reserves envisages a pro-active and people friendly framework to ensure long term protection and manitenance of the biological diversity and providing at the same time a sustainable flow of natural products and services to meet the needs of the local community. Therefore, a network of Community Reserves should be established for stregthening livelihood security and environmental protection.

4.4 Bamboo is an important NTFP. The economy of the forest based communities is greatly dependent on bamboo because of its multiple uses. Cultivation and management of bamboo should be encouraged.

4.5 Fuelwood continues to be the predominant source of energy in rural areas. To meet the requirement, afforestation programme should be intensified with special emphasis on plantation in degraded areas so as to decrease pressure on natural forests.

4.6 Non-timber forest produce including medicinal plants provides sustenance to rural population. So their production should be enhanced to generate employment opportunities and income of the people. Establishing institutions in the form of Non-timber Forest Produce Agency may be constituted for their effective utilization.

4.7 Eco-tourism is an important industry in the present scenario. Effort should be made to develop ecotourism sites.

4.8 Diversion of goods forestlands, biodiversity rich, ecologically fragile and environmnetally sensitive areas and productive agricultural lands for other purposes should be discouraged.Unavoidable diversion of forest lands for developmental purposes may be allowed with the prior informed consent of the community and only after building in environmental safeguards and adequate compensatory afforestation measures. The productivity of existing forest and agricultural lands should be increased through improved management practices and application of appropriate technology.

Environmental Impact assessment of all scheduled development projects to be made compulsory. Catchment treatment plan should be included for all hydel power, irrigation and water supply projects.

4.11 Arrangement should be made for the disposal of solid waste materials and garbage, both biodegradable as well as non- biodegradable to check environmental degradation.

4.15 Nagaland has strong Traditional Village Institutions at the local level. In the absence of any major industries and the subsistence nature of agriculture, forests and natural resources are the most important economic resource around which the authority and activities of these traditional institutions are centered. This has resulted in a strong regulatory institution at the local level that manages the common resources and maintains order in the usage and sharing of resources in conformity with existing customary laws.It is therefore imperative that these institutions are enlightened and strenghthened so that their law making powers especially in subjects relating to the sharing and use of natural resources can be channelized towards conservation and sustainable management practices.

5. STRATEGY

5.1 Environment and Forests:

The National Forest Policy envisages that one-third of the total land area should be under forest or tree cover. The state, with more than two third of its area under forest cover, the existing forest cover should be maintained and enriched consistent with the developmental needs of the state. Considering that the extent of forest cover in the region is by and large adequate, there should be appropriate incentives and rewards to further motivate communities to preserve and enrich the same.

5.2 Afforestation :

5.2.1 A need-based and time bound programme of regeneration,afforestation and tree planting, with particular emphasis on fuelwood, timber and bamboo, on the degraded forest land and jhum land.

5.2.2 It is necessary to encourage the planting of trees alongside of roads, rivers and streams, urban sprawls and other unutilized lands not having natural vegetation,either private/community ownership. Green belts should be raised in urban/ industrial areas.

5.2.3 Available lands, not put to use for other purposes such as agricultural under Village and Community ownership, be taken up for the development of tree crops. Afforestatetion being a time specific activity, technical inputs and other necessary assistance such as administrative and financial approval for initiating such programmes should be planned well in advance.

5.3 Management of Forests:

5.3.1 Programmes and projects which adversely affects forests that covers steep slopes, catchments areas of rivers, lakes, and reservoirs, geologically unstable terrain and such other ecologically sensitive areas should be severely restricted.

5.3.2 In accordance with the policy of sustainable Management of Forest Resources, Working schemes in natural forests and tree felling regulation in the plantations should be prepared and approved by government for regulation of the timber extraction in sustainable manner. Such feasibility approval should be in consonance with the various prescriptions of the National Working Plan Code. The effect of the forest management on forests should be periodically measured with the help of set criteria and indicators (C & I). The state should issue necessary guidelines to put in place a monitoring mechanism to regulate compliance of management/Working Plan prescriptions.

5.3.3 Joint Forest Management (JFM) practices should form the basis of forest management in the State. The active participation of the people will be solicitated in the creation, management and protection of the forests.

5.3.4 Judicious conservation and maintenance of forest cover and productivity through the application of scientific and technical inputs. Production forestry programmes, while aiming at enhancing the quality of the forest and meeting bonafide local needs, should also be oriented towards narrowing the increasing gap between demand and supply of timber and fuelwood.

5.3.5 As far as possible native fast growing species needs to be encouraged and care should be exercised while introducing any exotic species. Long-term scientific trials needs to be undertaken by specialists in ecology and forestry to establish that the species are suitable and have no adverse impact on native vegetation and environment.

5.3.7 Bamboo is a poor's man timber. 5 % of the total bamboo available in the country is found in the State. It has multiple utility and versatile in nature. Development of bamboo resources for feeding the enterprises should be encouraged with active financial, technical and marketing support to the farmers.

5.3.9 Encourage adoption of science-based, and traditional sustainable land use practices, through research and development, extension of knowledge, pilot scale demonstrations, and large scale dissemination, including farmer's training, and where necessary, access to institutional finance.

5.3.10 Promote reclamation of wasteland and degraded forestland, through formulation and adoption of multi stakeholder partnerships, involving the land owning agency, local communities, and investors.

5.3.11 Prepare and implement thematic action plans incorporating watershed management strategies and expanding green cover.

5.3.12 Promote sustainable alternatives to shifting cultivation where it is no longer ecologically viable, ensuring that the culture and social organisation of the local people are not disrupted.

5.4. Management of Environment :

5.4.1 Natural forests preserved by the community/private should be encouraged and assistance for conservation and management of such areas should be given importance. Preservation of such forests will mitigate the environmental imbalance and serves as carbon sink.

5.4.2 Efforts should be made to preserve forests and natural vegetation in altitudes of 1500 meters above sea level to conserve water, control soil erosion and ecological degradation.

5.4.3 Encourage agro-forestry, organic farming, environmentally sustainable cropping patterns, and adoption of efficient irrigation techniques.

5.4.4 Industrial units are required to take necessary safeguards to reduce pollution particularly those affecting the health of the soil, land and water bodies and should be encouraged to raise captive plantations.

5.4.5 Mining programmes for both minerals and oil should contain detailed plans not only for mining operations but also rehabilitation of the mined areas. Land use plan for such areas should be examined against the cost involved and the social needs of the adjoining areas

5.4.6 To check the pollution of air, steps should be taken to regulate the emission levels of all types of vehicles. Norms need to be fixed for the air polluting industrial units. Polluting industries to be located away from populated areas.

5.4.7 Pollution Control Board should be strengthened and supported with all necessary infrastructure and manpower.

6. Ecotourism :

Eco-tourism is responsible travel to natural areas that conserves the environment and improves the welfare of local people. Eco-tourism emphasizes on local resources and local participation, it is about exploiting tourisms potential for conservation and development and about averting its negative impact on ecology, culture and aesthetics. The enormous opportunities and awesome risks of nature tourism lie at the heart of the eco-tourism mission.

6.1 Eco-tourism has tremendous opportunities and potential in the state and can lead to the economic development of the local people through non-consumptive management and use of forest areas of natural, historical and mythological importance. The State will make all efforts to identify, develop and support non-invasive eco-tourism initiatives with the active involvement of local communities.

6.2 The state shall move toward a more integrated form of management that focuses on the interface between the concerned Government agencies and the local stakeholders and the role that external agencies like NGOs can play in brokering appropriate institutional arrangements. An arrangement, which recognizes the conservation needs as well as the social and economic needs of the communities living in tradition bound societies while bringing in more aware and responsible travellers to these natural areas. The ecological significance & fragility of these areas of high biodiversity values coupled with the poor economic status of the people necessitates an integrated approach to tourism in order to address both these drawbacks.

7. Rights and Concessions :

7.1 Right and Concessions including grazing should always remain related to the carrying capacity of the forests. The capacity should be optimized by increased investment, silvicultural research and development of the area. Stall feeding of the cattles should be encouraged.

7.4 The long-term solution for meeting the existing gap lies in increasing the productivity of forests, but to relieve the existing pressure on forests for the demands, substitution of wood needs to be taken recourse to.

7.5 For domestic energy, fuelwood needs to be substituted as far as practicable with alternate sources like bio-gas, LPG and solar energy.

8. Wildlife & Biodiversity Conservation

8.1 The state has only a small area under its control and the existing protected areas will be managed through approved management plans to ensure conservation of flora and fauna.

8.2 Conservation efforts will be supplemented outside Protected Areas by declaring identified critical habitats of flora and fauna in the ecosystem as 'conservation reserve' and 'community reserve' where ever feasible under Wildlife (Protection) Act ,1972. Given the unique landholding pattern in the state community initiated conservation efforts in the form of Community Conservation efforts shall be encouraged.

8.3 Corridors between National parks, Sanctuaries, other forest areas and protected areas will be identified and established to maintain genetic diversity of flora and fauna, and minimize straying of wild animals in to human habitation and thus mitigate human animal conflict.

8.4 Stakes of communities in conservation efforts will be strengthened and ensured through their active involvement in eco-development committees and by partnering them in ecotourism and other activities.

9. Stabilization of Jhum Cultivation :

Shifting cultivation areas of Nagaland exhibits one of the best examples of community controlled and managed common property resources in the country that ensures equitable tenurial access to production resources for all community members irrespective of the ownership of land. Farming and forestry as practiced in *jhum* cultivation are strongly based on customary Common Property Regimes, a wealth of indigenous and ecological knowledge systems and the existing customary institutions. Changes to any one of these components would affect the other components as well.
Also recognizing that the practice of shifting cultivation have been stressed both by external and internal forces it is imperative to provide an enabling envoronment in order to address the urgent livelihood needs and ecological concerns arising out of rapid transformations driven by development and other externalities including market forces.

Therefore the state shall endeavor to support decentralised, participatory, multi-stakeholder, interdisciplinary and adaptive management approaches that respect human and cultural diversity, gender equity, livelihood security and environment stability where traditional knowledge and scientific information are both valued and build upon.

9.1 Recognizing the land degradation due to shifting cultivation is a major environmental concern adversely affecting productivity and socio-economic conditions apart from ecological implications, suitable measures shall be taken for addressing the problem such as agro-forestry approaches i.e. integrating jhum cultivations with trees plantation or plantation through cultivation, introducing of locally fast growing species, encouraging the cultivators to promote plantations in their jhummed areas, setting aside uncultivated for those areas which are ecologically fragile and sensitive.

10. Forest Fire Control Measures:

10.1 The State Government shall map out fire prone areas and ensure that adequate funds are earmarkeed for identified fire prone areas on project basis.

10.2 The State Government shall implement the provisions of the National Fire Prevention and Control guidelines of 1999 issued by the MoEF and take suitable measures for prevention, detection and control of forest fires.

10.3 The JFM Committees/Village Councils shall be assigned specific roles for fire prevention and control and the Committees be given incentives for fire prevention.

11. Damage to Forests from Encroachments :

11.1 Encroachment is one of the major problems and also main reasons for depletion of valuable forest resources in the state. The National Forest Policy, 1988 vide its para 4.8.1 envisages that "encroachment on forest land has been on the increase. This trend has to be arrested and effective action taken to prevent its continuance. There should be no regularization of existing encroachment"
It was further strengthened by the Hon'ble Supreme Court order dated 12.12.1996 in PIL (WP) 202 OF 1995 in the case of T.N.Godavaraman Versus Union of India & others, wherein the concept of sustainable development was stressed upon.

12. Forest-based Industries

In accordance with the directives of the "Hon'ble Supreme Court of India", establishment of forest based industries and supply of raw materials would be as follows:
12.1 All wood based industries would be located within approved industrial estates.
12.2 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.
Small and marginal farmers would be motivated to grow on marginal/ degraded lands available with them.
12.3 Forest-based enterprises, except that at the village or cottage level, should be permitted to be established only after ascertaining availibility and assured supply of raw material.

13. Sacred groves:

13.1 Sacred groves are the repositories of rich biodiversity of the State. All the Sacred Grooves will be identified and protected with the support of local communities.
15.2 Responsibility of each Sacred Grove will be entrusted to the local communities that could act a cohesive fashion in Sacred Grove management and conservation.

14. Forestry Extension and Environmental Education

Forest conservation strategy cannot succeed without the willing support and cooperation of the people. It is essential, therefore, to create interest in the forests, their development and conservation, and to make them conscious of the value of trees, wildlife and nature in general. Effort should be made to involve educational institutions and local bodies -village council, town committee, etc. for this purpose. Suitable programmes should be propagated through mass media, audio-visual aids and other extension machinery. Creating awareness as to the long term benfits and the quality services provivded by the forest resources has to be highlighted and the message of finer points of conservation needs to be communicated to the people through seminars, workshops and model demonstration areas.
Environmental education is the principal means of enhancing such awareness, both among the public at large, and among focused groups. Such education may be formal, or informal, or a

combination of both. It may rely on educational institutions at different levels; the print, electronic, or live media; and various other formal and informal settings.
The Supreme Court has also mandated that environmental education must be imparted at all levels, including higher education in the formal system.

15. Forestry Education :

15.1 Forestry should be recognised both as a scientific discipline as well as a profession. Specialised and orientation courses should be given to the forest personnels for developing better management skills.
15.2 The exisiting infrastructure and manpower at the State Environment and Forestry Training Institute (SEFTI) would be upgraded and strengthened and if required institutional backup would be sought for.
15.3 A course on forest and wildlife conservation should be introduced at Administrative Training Institute in the State for creating awareness amongst other central and state services in the state.

16. Forestry & Environment Research :
The forestry research programme needs to be identified as a priority sector within the forestry sector keeping in view of the importance of the forestry development and sustainable management emerging in the present scenario. With Forestry Research being the backbone of forest management, it will ensure the sustainable management of forests in the state. The mandate of the Research shall be to provide technical support to various forestry related institutions, as well as other stake-holders and the forestry sector as a whole, in the state. The research priorities in the State are :

- Ecology and Biodiversity Conservation
- Silviculture and Forest Management
- Seed Technology
- Forest Mensuration and Biometrics
- Genetics, Plant Propagation and Tree Improvement
- Promotion of Medicinal Plants in the State:
- Ethno-botanical studies:
- Socio-economic studies and impact assessment:
- Transfer of technology:
- Climate Change and its implications.
- Research on wildlife

In this regard a proper linkage with the research institutions both at regional level and national level needs to be established.

17. Conservation of Medicinal Plants
Forests have been the source of invaluable medicinal plants since the time man realized their preventive and curative properties and started using them for human health cover. In view of the richness of medicinal and herbal plant diversity in the state, a mechanism will be developed

for in -situ and ex -situ conservation, domestication and sustainable harvesting with the active support of the local people including traditional healers. The Medicinal Plants Sector will be promoted in the State as a livelihood and health care system apart from the conservation of biological diversity. The State Govt. will mobilize resources for this sector with the assistance from the National Medicinal Plants Board, GoI, Department of AYUSH, New Delhi besides setting aside budgetary provisions for the sustainable development and management of medicinal plants.

18. Forest Survey and Data Base

Priority should also be accorded to the survey of forest resources on scientific lines for updating the information. Collection, collation and publication of reliable data on relevant aspects of forest management needs to be improved using modern technology and equipment. Documentation & inventorization of biopiracy & commercial exploitation of natural resources will be carried out.

19. Legal Support and Infrastructure Development

Appropriate legislation should be undertaken, supported by adequate infrastructure in order to implement the Policy effectively. In order to deal with legal issues relating to encroachments, public litigations arising out of the RF, NP, WLSs, Tribal Acts, and dealing with litigations, a legal cell with legal experts is to be created.

20. Biodiversity and Traditional knowledge:

Conservation of genetic diversity is crucial for development of improved crop varieties resistant to particular stresses, new pharma products etc apart from ensuring the resilence of ecosystems. Traditional Knowledge referring to ethno-biology knowledge possessed by local communities is the basis of their livelihood and also a potent means of unlocking the values of genetic diversity. Action to be pursued are:

a) Strengthen the protection of areas of high endemism of genetic resources ("biodiversity hot spots"), while providing alternative livelihoods and access to resources to local communities who may be affected thereby.

b) Mandatory assessment of the potential impacts of development projects on biodiversity resources and natural heritage. Appraisal of such projects by cost-benefit analysis, assign values to biodiversity resources at or near the upper end of the range of uncertainty. In particular, ancient sacred groves and "biodiversity hotspots" should be treated as possessing "Incomparable Values".

c) Enhance *Ex-situ* conservation of genetic resources in designated gene banks across the country. Genetic material of threatened species of flora and fauna must be conserved on priority. Biodivesity registers at village level to be maintained.

d) Efforts will be made to scientifically validate the practice of Local Health Traditions and other traditional plant based knowledge systems through research and development with a view to patenting these knowledge syatems.

21. Fresh Water Resources:

21.1 River Systems

21.1.1 Rivers of the State: The rivers of Nagaland flow either into Brahmaputra in the west of Assam or into the Chindwin in the east in Myanmar. The Rivers that flow into the Brahmaputra are Dhansiri, Doyang, Tsurang, Milak, Dikhu, Tiru and Tizit and the rivers that flow into the Chindwin are Zungki, Likhimro, Lanye with their tributaries.

21.1. 2 Riverine Eco- systems of the State needs to be protected and as under:

21.1.2.1 The catchments of river systems in the forest area will be managed on integrated watershed approach for increasing sustainable water supply in downstream areas by appropriate interventions including forestry activities.

21.1.2.2 Afforestation programs for rehabilitation on protection of riverbanks will be developed and implemented with the active participation of communities.

21.2 Ground water:

Groundwater is present in underground aquifers in many parts of the state. Aquifers near the surface are subject to annual recharge from precipitation, but the rate of recharge is impacted by human interference. The water table has been falling rapidly in many areas of the state in recent decades. This is largely due to withdrawal for agricultural, industrial and urban use, in excess of annual recharge. In urban areas, apart from withdrawals for domestic and industrial use, housing and infrastructure such as roads, prevent sufficient recharge. In addition, some pollution of groundwater occurs due to leaching of stored hazardous waste and use of agricultural chemicals, in particular, pesticides. Since groundwater is frequently a source of drinking water, its pollution and contamination leads to serious health impacts.

The following actions will be taken:

a) Promote efficient water use techniques, such as sprinkler or drip irrigation, among farmers.

b) Support practices of rain water harvesting and artificial recharge and revival of traditional methods for enhancing groundwater recharge.

c) Mandatory rainwater harvesting and artificial water recharge in all new constructions in relevant urban areas, as well as design techniques for road surfaces and infrastructure to enhance groundwater recharge. Promote capacity development of relevant stakeholders and provide web based information on water harvesting techniques.

d) Prepare and implement a comprehensive strategy for regulating use of ground water by large industrial and commercial establishments on the basis of a careful evaluation of aquifer capacity and annual recharge.

e) Support R & D in cost effective techniques suitable for rural drinking water projects for remedial measures and removal of arsenic fluoride, and other toxic substances and mainstream their adoption in rural drinking water schemes in relevant areas.

f) Improve productivity per unit of water consumed in industrial processes, by making water assessments and water audits mandatory in identified industries and utilities.

g) Suitable sites for dumping the toxic waste material may be identified and remedial measures may be taken to prevent the movement of the toxic waste in the ground water.
h) Excessive use of fertilizers, pesticides and insecticides are the main sources of pollution. These pollutants contribute to the contamination of the ground water as well as surface water. The optional utilization of fertilizers, pesticides and insecticides should be encouraged for improving the water quality.

22.Climate Change:

Climate Change has emerged as one of the most serious environmental and socio-economic concerns of our times. It is a global phenomenon with diverse local impacts likely to alter the distribution and quality of our natural resources and adversely affect the livelihood of the people specially the poor and marginalized communities.

In 1992, India adopted the United Nations Framework Convention on Climate Change, global initiative to combat climate change.Article 3 of the UNFCCC states that "parties should protect the climate system for the benefit of future and present generations of human kind on the basis of equity and in accordance with their common but differentiated responsibility and respective capabilities."

A latecomer into the nation's development process and with a per capita Green House Gas emission barely a fraction of the national average and the magnitude much below that of other industralised states of the country, the state's economy is closely linked to its natural resource base and climate-sensitive sectors such as agriculture and forestry.Hence, the state faces an increased risk of the negative impacts of climate change.

The state would therefore adopt a climate friendly, equity based and sustainable developmental path taking into account our "common but differentiated responsibilities and respective capabilities", and our regional development priorities, objectives and circumstances. A State Action Plan on Climate Change would be prepared within the ambit of the National Action Plan on Climate Change (NAPCC) albeit with modifications that suits the specific requirements of the state.

A climate change cell should be set up to coordinate the gathering of information, conduct research and offer solutions to the problems with regard to food security, change in rainfall patterns etc. Climate change initiatives to be started with the cooperation of the civil society at large to achieve:

a) Energy efficiency.
b) Harness renewable energy sources.
c) Adaptive management in agriculture.
d) Promote climate friendly technologies.
e) Launch campaign on 3Rs-recycle, reduce, reuse

23. Financial Support for Forestry and Environment:

The objectives of this Forest and Environment Policy cannot be achieved without the investment of financial and other resources on a substantial scale. Such investment is indeed fully justified considering the total contribution of forests in maintaining essential ecological processes and life support systems and in preserving genetic diversity. Forests should not be looked upon as a source of revenue alone. Forests are a renewable natural resource. They are a national asset to be protected and enhanced for the well-being of the people. Effort should be made to allocate a minimum of 5 % plan budget per annum to this sector.

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