# State Afforestation Policy

## 1. Preamble

Forests are one of the most important natural resources in the State as these provide fuel, fodder, small timber, food and income to the tribals and rural poor. State is endowed with rich and diverse forest resources, but survey based on satellite imagery has shown that existing resources are highly degraded. One of the reasons for such degradation has been severe land scarcity in the State due to influx of migrants from Bangladesh. Indigenous tribals, practicing shifting cultivation in relatively fertile forest areas, have been marginalized and have moved to practice shifting cultivation in more fragile areas on shorter cycles. Poor farmers and landless population have encroached on forest areas, creating sites of perpetual degradation. Other factors responsible for degradation of forests are: over exploitation, illegal felling & smuggling and damage from fires & grazing.

With a view to halt decimation of forests and eco-restoration, the endeavor has been to cover all forests under scientific management by way of working plan prescriptions and to bring more and more areas of degraded forests and un-arable uplands in private holdings under tree cover by way of economic plantations. In absence of any well laid afforestation policy, many indigenous species have become endangered & threatened with extinction and different multitier management and afforestation models have vanished due to disuse. Though considerable investment has been made in raising plantations, its impact on enhancing the forest and tree cover and also the productivity has been much below the expectation. The yield obtained are far short of potential. There is evidence of inadequate silvicultural operations in all plantations. Plantations have been given moderate protection and site preparation, and the quality of planting material is poor. Suitable models, species mix and technologies have not been employed to solve the problems of different sites, and scant regard and insufficient attention have been given to promote models and species that truly meet the needs of existing land uses and community needs. Little attention has been given to managing natural forests, which are rich repository of biodiversity, and which provide more of the products that local people need and use. Non wood forest produce on which local communities are dependent did not receive any attention. Neither has much effort been made to regenerate forests from existing rootstock and in various stages of degradation. Involvement of local communities in afforestation efforts has shown promise for reversing the trends in forests degradation, but results indicate that unless improved institutional arrangements are adopted, its replication over large areas would not be possible.

The proposed policy, under broad framework of National Forest Policy (NFP), envisages effective rehabilitation of degraded forests and extending tree cover

beyond traditional forest areas through suitable multi-product afforestation models to conserve biodiversity and to satisfy local people's need and use. Joint forestry planning and management arrangements involving local communities would be integral part of all afforestation efforts to ensure replication of low cost afforestation models over vast areas and to ensure enhanced productivity of multiuse products from existing forests.

## 2. Goals & Objectives

The main goals of the policy are :

- Biodiversity conservation

- Ecological restoration of degraded forests and fragile areas

- Expanding forest cover beyond traditional forest areas

- Enhancing the productivity of the forests and tree cover to meet the growing requirements of multiple use products

   The basic targeted objectives that would govern the State Afforestation Policy are the following :

- Conservation and protection of Forest areas which are critical and which are with relatively intact cover.

- Rehabilitation of 80,000 ha of degraded forests, 20,000 ha of non-forest wastelands and identified fragile areas, by adopting suitable afforestation models which are cost effective and easy to replicate over vast areas.

- Developing multi-product and multi tier forest plantations which tend to maximize diversity, ecological benefits, economic benefits accruing to local people and to satisfy local people need and use.

- Promoting plantation of indigenous species which have become endangered or extinct.

- Increasing the productivity of natural forests and plantations by providing appropriate research inputs and management practices.

- Promoting farm forestry over 10,000 ha of small holdings years by providing appropriate incentive framework and required technical, financial and material support.

## 3. Approach

The approach of the policy in achieving the above mentioned objectives would be based on the following.

1. Afforestation endeavour should be strongly oriented towards environmental improvement, and ensuring protection of afforested areas. Afforestation models should be geared heavily towards factors that would foster strong community stakes in forest protection. With in the afforestation areas, the actual species and models used should be judged from differing standpoints of silvicultural, socio-economic, soil and moisture conservation, livestock & fodder, wildlife & biodiversity and with a strong convergence of viewpoints.

2. Plantations should have beneficial impacts of improved silviculture, socio-economic returns, soil/moisture conservation, wildlife and bio-diversity conservation through improved habitats. Inter plant competition should be reduced by wider spacing. Greater variety of species, multitier mixture of trees, shrubs and ground story vegetation should be promoted to ensure better use of light and nutrients. More Non Wood Forest Produce (NWFP) should be available at lesser cost and more ground vegetation should produce more fodder and help soil and moisture conservation. Whenever possible attention should be given on contour cultivation with installation of contour trenches which would help in better growth from moisture conservation, reducing erosion and increased fuelwood and NWFP availability from shrublings.

3. Emphasis should also be given on production forestry, agro forestry and enrichment planting on better sites in public degraded forest reserves, unclassed Government lands and on private lands. Some of the main species would include Sal (Shorea robusta), Teak (Tectona grandis), Gamar (Gmelina arborea), Korai (Albizzia procera) with extensive plantations of bamboo.

## 3. Strategy

### 3.1 Community participation

1. Local communities would be involved in forestry planning and management with the principle of "care and share" on the basis of existing resolution of Joint Forest Management (JFM) in the State. To make the Joint Forest Management Committees (JFMCs) more effective and to ensure their empowerment, institutions of local self governance in Autonomous District Council (ADC) and non-ADC areas would be involved in formation and functioning of JFMCs. Benefit sharing arrangements would be made more explicit and improved such as creation of user group fund to empower the user groups with sufficient resilience against financial crisis and shocks. Norms for committee membership and registration would also be specified.

2. Initial results of progress of Joint Forest Management (JFM) in the State has shown an overall increase in the level of forest protection and productivity, but

the results are not consistent with each site. Level of awareness, attitude of forest officers, regular income flows,clear benefit sharing arrangements with identified communities and transparent sharing mechanism have been some of the key factors in developing successful JFMCs. Keeping in view these factors, Joint Forest management would be expanded_significantly to cover all the areas of degraded forests, which can be rehabilitated through protection only or through protection plus enrichment planting.

3.  It is estimated that large areas of good forests are in danger of imminent degradation, unless improved institutional arrangements are adopted for protection and management of these areas. Accordingly active participation and involvement of local communities under Joint Forest Management (JFM) would be extended gradually in good forest areas also through appropriate sharing and functional mechanism. Increased production of Non Wood Forest Produce (NWFP) would be the basis for such JFMCs as it would provide benefits across income groups with substantial benefits accruing to poor and marginal households.

4.  Rehabilitation and sustainable management of degraded private and public lands used by the village community are only possible when rural people gain control over their own natural resource base and when such amelioration activities are matching with needs and options of specific sites. Accordingly, involvement of local communities would be promoted in management of such degraded lands.

5.  Eco-development activities would be undertaken and Non Wood Forest Produce and its value addition would be promoted across all JFMCs as it holds the promise to ensure sustainable income to local communities under Joint Forest Management (JFM) and to strengthen the livelihood security of these communities. This would also ensure increased sense of participation and ownership among these communities, which would lead to improved management and productivity of natural forests as well as plantations.

## 3.2 Site specific management and treatment models

1.  Forest areas which are critical would be conserved at all costs. Forest areas with relatively intact cover would be protected by ensuring appropriate institutional arrangements and improved management practices.

2.  Degraded areas would be rehabilitated by afforestation for eco-restoration. Areas having viable rootstock would be rehabilitated through protection or protection plus enrichment planting. Effected natural regeneration areas would be provided with aided natural regeneration (ANR) inputs.

3. Very steep and severely degraded areas, usually in the close vicinity of villages, would be restored with vegetation by affording protection. Soil conservation and water management would be main purpose for this treatment. Live fencing would be erected to demarcate and to protect the area encouraging natural vegetation to come up. Only minimal planting or sowing would be done and naturally occurring species would be favoured.

4. The sloped, boundary and other forest waste lands near the villages, which do not have sufficient rootstocks to resuscitate and cover the ground, would be rehabilitated for fuelwood and fodder production. Gram/legume pasture development and silvipastoral system would also be developed. Cut and carry or regulated grazing would be adopted in such areas.

5. Natural forests would be managed to supply bulk of required needs of non-wood forest produce (NWFP). Available resources of bamboo, cane, medicinal plants, herbs, shrubs and climbers would be conserved, rejuvenated and developed to support conservation endeavors and to provide enhanced benefits on sustainable yield basis.

6. The forest management strategy would be to look beyond traditional sivlicultural systems, which focus attention on certain species of commercial timber only, to ensure a wide perspective of forest productivity. Emphasis would be given on ecologically supportive management practices such as keeping intervening strips of natural forests in between plantation blocks of managed forests, maintenance of gaps and fire lines, varying age structure and size distribution in blocks, cessation of predetermined interventions and follow need based interventions depending on condition of the forests/crop, forest floor management through controlled or reduction of grazing, encouraging humus, litter fall & legume cultivation.

## 3.3 Species mix and site matching

1. Species and site matching would be ensured, and end use returns from plantations, not merely ease of plant raising and survival, would be the criteria for selecting species mix for different sites.

2. Raising of monoculture would be discouraged. Species, which cater to different local needs and uses would be promoted. Species of Non Wood Forest Produce (NWFP) such as bamboo, cane, medicinal plants, herbs, shrubs and climbers, which enhance bio-diversity and maximize the returns to local communities in terms utility and value addition, would be given priority in different afforestation models.

3. Bulk of existing pressure on forests is on account of large demand-supply gap for fuelwood and fodder. Accordingly large scale plantation of fuelwood and fodder species would be taken up on degraded forests and non-forests land near habitations/villages.

4. Certain identified species which produce valuable timber and which have potential to considerably enhance economic returns from plantations in forests and farm lands, would be encouraged, promoted and would also be introduced in suitable sites. A list of such species is given in Annexure-I.

5. Indigenous species which have become endangered or extinct or likely to be so in near future would be promoted at identified sites to conserve and enhance biodiversity. A tentative list of such species is given in Annexure-II, which would be updated and finalized after field verification, identification and survey.

6. In protected areas (Wild life sanctuaries and zoological parks), suitable fodder species and fruit bearing species would be raised to cater to requirements of existing wild life.

7. Multi-tier and multi-product afforestation models would be promoted to obtain sustainable yield of multiple products, while protecting biodiversity and retaining, as far as possible, natural plant association.

## 3.4 Improving productivity

1. Quality of planting stock would be improved by improving the genetic constitution as well as physical quality of plants. Raising of seed orchards and selection of plus trees and improved supply, certification, harvesting and handling, including treatment, of seeds used in raising of nursery would be ensured. Existing nursery practices would be improved by seedling culling and by adaptation of available technology. Macro-propagation and micro-proliferation facilities would be developed for identified species to ensure very high multiplication rates, plant production through out the year and to induce improved yield & qualities.

2. Planting material would be priced based on cost of production of quality seedlings, to encourage and promote nursery growers to produce quality seedlings under existing scheme of Decentralized Peoples' Nursery (DPN).

3. Apart from appropriate specie-site matching, emphasis would be given on site preparation to ensure optimum opportunity for growth of the seedlings.

4. Proper and timely silvicultural intervention would be given equal importance to area expansion under plantings. Regimes with silvicultural treatments like pruning, coppicing, multiple shoot cutting would be promoted and practiced with a need based approach.

5. Present pressure on account of cattle grazing is much beyond carrying capacity of forests and it constitutes a great threat to conservation of forests. Apart from interface forestry development near habitations, rotational grazing and stall feedings would be promoted.

6. Plantations as well as natural forests are severely damaged by forest fire. Local communities under Joint Forest Management (JFM) as well as local institutions would be involved in forest protection against fire through appropriate incentive mechanism.

## 3.5 Promoting tree planting outside forest areas

1. The innovative farm forestry scheme of 'Angan-Ban Prakalp' which envisages adequate fiscal incentives, technical guidance and material support to selected beneficiaries in raising forestry tree species on upland and non-arable land of private holdings, would be taken up on massive scale, through involvement of PRIs and BACs.

2. Farm forestry would be developed by providing appropriate technical support and fiscal incentives to promote multi product planatation models, to maximize regular and sustained benefits to the farmers. Group approach would be adopted to ensure appropriate market linkage. Boundary plantations would be discouraged, as the holdings in the State are too small.

3. Existing harvesting and transit restrictions relating to different species being promoted under farm forestry would be reviewed and eased to the extent possible.

4. Tree planting would be encouraged alongside roads, railway lines, streams, canals and other unutilized lands under State/ Corporate/ Institutional or private ownership. Programmes to generate massive awareness for tree planting would be taken up by involving local institutions, clubs, schools and colleges. Green belts would be raised in urban/industrial areas. Such practice would improve the microclimate and restore ecological conditions.

5. To promote tree planting in community and non--forest public lands, Tree Patta Scheme would be implemented which envisages to provide firm usufructory rights, in writing in the form of patta, to rural poor and landless over the trees planted by them on community and non-forest public land. PRIs and BACs would be involved in implementation of the scheme.

## 3.6 Research, extension and technological support

1. The focus of research and technology dissemination would be to improve existing seedlings & nursery practices, silvicultural techniques and site

management practices for different end use, to ensure desired level of productivity, to keep cost of production down and to generate the needed range of forest products.

2. Afforestation technologies which address the locale specific field problems would be selected from possible feasible list of options. Some are already in use, others might be needing fine tuning like silvipature models.

3. Sociological research would be carried out to develop appropriate Joint Forest Management (JFM) models and to design appropriate institutional arrangements in different socio-economic conditions.

4. Research support would be provided to improve practices for high productivity afforestation and to develop new farm forestry models. Suitable technical packages would also be developed and staff trainning, publicity and outreach programmes would be organized to reach the farmers.

5. Specific conservation models for different critical areas would be developed. Studies on ethno-botany would be done and increased knowledge would be developed to support conservation, propagation and management of different species of trees, ferns, herbs, shrubs, climbers and orchids. For conservation of orchids, orchiderium would be developed and hybridization programme would also be undertaken to realize full economic potential of orchids in the State.

6. Database would be developed for improved species and site matching by conducting studies on growth potential of different species and its market potential & price structure to identify the economic species and end products for different sites and locations.

7. Improved information transfer process would be ensured through involvement of local communities and institutions and by providing research back up to tailoring recommendations for different sites, end uses, market demand and prices.

## 4. Funding

Based on proposed targeted objectives, it is estimated that an amount of Rs. 250.00 crores would be required for the same. An integrated project on holistic perspective has already been prepared and submitted for funding by external donor agencies. Immediate action towards targeted objective would be initiated from funding available from Government of India under Central Sector and Centrally Sponsored Schemes and also from available internal resources of the State.

## 5. Implementation, institutional support and monitoring

For effective implementation and monitoring, institutional support of Forest Department, Rural Development Department, Tribal Welfare Department, Tripura Tribal Areas Autonomous District Council (TTAADC), Horticulture Department and institutions of local self governance in ADC and non-ADC areas would be taken. Annual afforestation targets would be fixed for different identified and prioritized species on the basis of appropriate site specific models of afforestation. The emphasis would be to harmonise afforestation/tree planting activities avoiding duplication of efforts, multiplicity of schedules and approach to beneficiaries with appropriate delineation of mandate, strategies, approaches etc. amongst various Government agencies taking up plantation works. Mechanisms to source and deploy the funds on a task basis rather than on a budget-expenditure basis will be put into place. Detailed monitoring with guidelines and systems will be put into place in a manner that at any point of time, progress on all fronts canbe monitored effectively.

A State Level Co-ordination Committee for Implementation of Programme of Tree Planting and Development of Wasteland in the State exists under the Chairmanship of the Chief Secretary/Principal Secretary, Forests and consisting of representatives of all the line departments. The committee would monitor the implementation of the targeted objectives and would regulate and ensure accountability as well as suitable corrective measures for implementation. The committee would meet at least twice in a year to review the status of implementation.

Annexure - I

## List of species of trees having high timber value

1. Aquiloria melacensis - *Agar*
2. Pterocarpus marsupium - *Andaman padack*
3. Artocarpus chaplasa - *Chamol*
4. Diospires ebonum - *Ebony*
5. Gmelina arborea - *Gamar*
6. Dipterocarpus turbinatus - *Garjan*
7. Albizia procera - *Koroi*
8. Swietenia mahogany - *Mahogony*
9. Dalbergia latifolia - *Rose wood*
10. Pterocarpus santalinus - *Red sanders*
11. Santalum album - *Sandal wood*
12. Michelia Montana - *Sundi*
13. Shorea robusta - *Sal*
14. Tectona grandis - *Teak*

Annexure - II

## List of plants endangered and threatened with extinction

1. Duabanga grandiflora - *Ramdala* (Tree)

2. Adina sessifolia - *Haludehaki* (Tree)
3. Michelia montana - *Champa sundi* (Tree)
4. Magnolia pterocarpa - *Duli champa* (Tree)
5. Lochio spermum - *Halde simul* (Tree)
6. Canarium Stricum - *Dhup* (Tree)
7. Aquiloria melacensis - *Agar* (Tree)
8. Pterocarpus santalinus - *Rakta chandan* (Tree)
9. Santalum album - *Chandan* (Tree)
10. Rauvolfia serpentina - *Sarpgandha* (herb)
11. Dischidia raflosiana - *Lantana kalasi* (Climbar)
12. Drosera burmanni - *Surja sisir* (herb)
13. Elaocarpus prunifolia - *Ban jalpai* (Tree)
14. Mangifera sylavitica - *Laxmi am* (Tree)
15. Entada phaseolides - *Gila* (woody climber)
16. Angiopteris evecta (Fern)
17. Cyathea gigantea (Tree)
18. Holmiathostachys zeylanica (Fern)
19. Podocarpus Nerlifolius (Tree)
20. Xantolis Assamica (Tree)