



1. INTRODUCTION

Sikkim is a beautiful Himalayan state situated on the flanks of Eastern Himalayas at the latitude of 27°00'46" to 28° 07' 48" and 88°00'58" to 89°55'20' longitude north. It has a very rugged topography defined with towering mountains and deep valleys. Even though the total geographical area is only 7096 sq.kms, its altitude varies from 244 mt. at Melli to 8,598 mt. at Mt. Kanchandzonga forming the mountaineering climate. The other important peaks in the state such as Kumbhakana (7,711 mt.) Penden (6706 mt.) Narsing (5,825 mt.) Kabru Dome (6,545) are also found in the Kanchandzonga range. Glaciers descend from these mountaineering peaks and form the source for the important rivers like Teesta and Ranghit in Sikkim.

It is perhaps the only state with no rail-link or air-link with the rest of the country. The road transport is the only mode of transport for reaching the state. The surface communication gets severely disrupted during the monsoon months due to landslides and breaches. On many occasions, the entire state gets cut off from the rest of the country for days together. The gloomy picture of the state is unable to attract the desired number of tourists due to non-availability of alternative approach in case of any road block or bandh. Even though the state has been recognized as peaceful state and has ample scope for tourist development but due to non availability of any second alternative route tourist in-flow is not up to the mark.

State economy which is mainly supported by agriculture and other small scale industries at present offers a lot of potential for Hydel Projects and Tourism development. Free flowing rivers can feed the Hydel Projects for power generation and the richness of flora, fauna, water falls, hot springs, Orchids, Rhododendron, snow capped mountains, adventure trekking, world renowned Monasteries, river rafting, customs & culture offer a great potential for tourism development. The uncertainty with the surface transport upsets the day to day functioning of the state administration and its overall economy. Besides, the state does provide a considerable potential for tourism that has remained unexploited so far.

2 Flora and Fauna

The forest of the state exhibits diversified variety of flora and fauna and is a natural paradise for nature lovers, conservationists, botanists, zoologists, and environmentalists. Sikkim being a high rainfall region encompasses within its narrow belt a luxuriant floristic composition ranging from tropical screw pines to alpine primulas. There are more than 4000 species of flowering plants, 300 species of ferns & its allies, 11 species of Oaks, 8 species of tree ferns and 22 species of Bamboos that grow at various altitudinal zones. The state is renowned for its Rhododendron and Orchids as also high altitude Primulas, Saussuria, Rheum, Saxifraga, Meconopsis and blue poppies. The flora of Sikkim is also esteemed for several medicinal plants like Aconitum, Anemone, Picrorrhiza etc. Non-wood Forest Produce has a vast potential like sand, boulders, and other materials. Sikkim has only 0.22% of the countries geographical area, but have 33% of the flowering varieties of the country.



Sikkim is also rich in faunal wealth and Himalayan animals such as Snow Leopard, Musk Deer, Blue sheep, Himalayan Tahr and rare pheasants are found in several parts of the pristine spots and virgin forests of the state. Its richness in the faunal resources is indicated by the reported more than 144 species of mammals, 429 species of birds, 39 species of reptiles, 9 species of amphibian, 16 species of fishes and 423 species of lepidopterous insects like butterflies and moths. The lakes fed by melting snows are the habitat of a number of resident and migratory waterfowls and other birds. State has declared 42% of its geographical area under Protected area network (PAN).

3. Past and present system of Road Reserve Maintenance:

During the King's time the road reserve & arboriculture was given very high importance and as per the notification No.3, dated 26.4.1905 & No. 878, dt.15.4.1909 the road reserve and arboriculture were defined as under:

- (A) Road Reserve: The attention of all Kazis, etc., was drawn to the old rule that 50 feet of land on each side of the public roads is reserved as a Road Reserve and that any one found cutting trees or cultivating within this area would be punished. It was added that steps would be taken against those persons who were found disregarding this rule and punishment by fine and confiscation would be dealt out to them if, within one week of this notice, anyone was found to have encroached upon this Reserve by cultivating thereon or to have destroyed any trees therein.
- (B) Arboriculture: At a Council Meeting held on the 30th March 1909 at the Residency it was resolved that trees should be planted by the roadside throughout Sikkim to provide shade for travellers.
1. Accordingly all Kazis, Thikadars and Lamas were directed to plant the following trees on the roadsides within their respective elakas:- a. Tuni, b. Kimbu, c. Sakua., d. Okhar.,e. Champ.,f. Buk.
 2. Any of the above six kinds may be planted, but no other kinds were to be planted.
 3. New trees need not be planted where there were trees already.
 4. Seedlings must be planted, not seeds, and they must be fenced securely against goats and cattle. The trees must be planted 9 (nine) paces (Kadam) apart. They will belong to the Kazi, Thikadar, Lama or bustiwallas who plant them, but must not be cut down without the permission of His Highness, the Maharaja.

In Sikkim, the roads are classified as National Highway, State Highways, Major District roads and other district roads, which are under the Border Road Organization (Project Swastik) state P.W.D. (Road & Bridges) and Rural Management and Development department (RMDD).

In the sub-section 4 & 5 of section 29 of the Sikkim Forests, Water Courses and Road Reserve (Preservation and Protection) Act 1988, the road reserve in relation to the National Highway and other highways has been well described. The road reserve referred to in



sub-sections (4) & (5) shall be under the administrative control of Forest Department as if it were a forest constituted under this Act.

4. Need for State Green Mission :

“Without adequate environmental protection, development is undermined; without development, resources will be inadequate for needed investments and environmental protection will fail”. (The World Bank, 1992).

The State of Sikkim has been primarily concerned with the conservation & protection of Forests and other natural resources in the state. In the State, though the Greenery along the road side is good it needs to be enhanced to the maximum level to protect the roads from landslides, slips, sinking and also to maintain the aesthetic beauty. It will also reduce land, water, air and noise pollutions as well. The Tourism development equally requires good roads along with the aesthetic cover to attract more tourists.

There is a need to have the avenue plantation along all the road sides, generate good green cover in the Government and Institutional vacant lands, development of vacant pockets as small parks. Hence the State Government has taken initiative to generate Avenue plantation in massive scale by using all the manpower in various departments in the Government, and other nature lovers from the Government and Non Governmental Organizations including different Eco clubs and Self Help groups. Accordingly Government has takeout a notification vide no 15/Home/06 dated 24/2/2006 in this regard. Hon’ble Chief Minister has formally launched this programme on 27/2/06 in the presence of his Ministers, officers and the public of Sikkim in the programme organized by the Forest Environment and Wild life Management department at Chintan Bhawan, Gangtok.

4.1 Aims and objectives of the state green mission

The basic objectives of the creation of the State Green Mission are as follows: -

- i) To create green belt and avenues for meeting aesthetic recreational needs to the people
- ii) To beautify the areas for tourist attraction.
- iii) To reduce the surface run-off discharge and checking erosion in the downhill side,
- iv) To create a store house of genetic diversity by planting all the indigenous trees, shrubs, herbs, climbers, creepers, conifers and green foliages including fruits and medicinal plants.
- v) To reduce the encroachment of roadreserve areas
- vi) To provide shade to the pedestrian
- vii) To increase local precipitation due to their aerographic and micro-climatic effects and create conditions favorable for the condensation of the clouds.
- viii) To reduce temperature and increase humidity.
- ix) To reduce noise pollution to the neighboring household population.
- x) To attract the avifauna, butterflies, squirrels etc and their shelter.
- xi) To promote tourism as a sustainable and eco friendly activity
- xii) To make the State of Sikkim as a Garden State
- xiii) Mass afforestation along the roads and vacant land, streams and water falls, etc.,



4.2 Coverage/extent of cover

It has been proposed to take up plantation in the vacant and open lands in the state, it includes the road reserves along the National Highway, State High way, District Roads and Other roads. It is also proposed to take up plantation in the Government and Private vacant lands, along Water falls and streams, Religious Institutions, other Government Institution lands.

4.3 Implementing agency

▪ **State level Committee**

A state level committee has been constituted under the Chairmanship of the H/ Chief Minister with the following members.

- **HM, Forests, Env't, WL – Vice Chairman**
- **Chief Secretary – Member**
- **Addl CS –cum- DC – Member**
- **Director General of Police - Member**
- **Secretaries of Finance, Industries, Tourism, AHVS, RMDD, HRD, PWD (Roads) Energy and Power, Water Security & PHE, Agriculture and Horticulture – Members**
- **PCCF-cum-Secretary – Member Secretary**

Functions

State level committee has to perform the following functions for the implementation of this mission

- **To provide overall policy guidelines**
- **To support implementation mechanism**
- **To decide on the coverage of the programme**
- **To over see the programme and to ensure timely provision of financial, material and manpower resources**

▪ **Constituency level committee**

The implementing agency will be the constituency level committee with the consultation of Department of Forest, Env. & Wildlife. The entire management will be under the overall administration of the committee.

- **Area MLA – Chairperson**
- **District Collector – Member Secretary**
- **Superintendent of Police – Member**
- **All Divisional Forest Officers – Members**
- **District Development Officer – Member**
- **Joint Directors, AH, Agri, Horti, HRD – Members**
- **Divisional Engineers, Roads & Bridges, irrigation, Energy and Power – Members**
- **Panchayat/JFMC/EDC presidents– Members**
- **Head of NGOs/SHGs – Members.**



Functions

State level committee has to perform the following functions for taking up actual plantation in the field.

- To plan for field implementation
- To supervise and monitor the implementation and to decide the modalities thereof.
- To guide the process of implementation
- To evict the encroachments with in the RR after following due procedure
- To motivate and ensure peoples participation
- To ensure supply of resources required including man power requirement
- To guide the department in procurement of manure,
- To guide the department in generation/ procurement of saplings/ seedlings for plantation
- To ensure plantation and post plantation care by deployment of labor from all the departments

Required man power should be met up by involving

- a). The M/R laborers from all the departments
- b). JFMC, EDC, SHG and different Nature club Members
- c). Volunteers from the Public

During the first phase i.e 2006-07 only such roads or parts of roads will be covered for which saplings are available. In addition to this, a separate avenue with Rhododendron and Paulonia is proposed in suitable areas. For technical know how, an officer not below the rank of BO will be appointed for every 2 to 5 km of avenue plantation, One District level officer will be appointed as Nodal officer for each constituency and Conservator/ JD level will also be appointed as Chief nodal officer for three constituencies. Plantation targets of 2007-08, 2008-09 will be fixed in the District Detailed project Report(DPR) after individual road lengths are surveyed and availability of space ascertained by the constituency level committee. Total target and budget requirement in Phase II and III will be reflected after receiving District DPR's which has to be prepared by the Territorial DFO's after consultation with District level committee.

5. PROCEDURE OF IMPLEMENTATION

5.1 Pre-Planting Survey.

Pre-planting survey will be carried out for determining the following factors for achieving success in the plantation programme.

- a) Preparation of maps for National and State highways showing areas for creation of avenue plantation and beautification of flanks areas.
- b) Selection of species for planting based on the geo-morphological conditions.
- c) To determine the type of site preparation required for different areas since the roadsides are very poor in soil conditions.



- d) To identify terrain, vegetation, soil type etc of the area to decide the saplings requirement.

5.2 Removal of encroachments/ obstructions in road reserves:

Steps will be taken to identify the areas where the encroachments exists in the RR and free them, so that the continuity of avenue plantation is maintained. To the extent possible overhead cables and

wires which can be shifted will also be identified and efforts made to remove them to provide space for planting trees/ shrubs. All the encroachments with in the RR and other areas has to be removed with the help and active involvement of the H/Area MLA, Panchayats and Public with in the Green Mission period.

5.3 Site Preparation,

The following measures are required to be taken up

- a) Site clearance by removing stones, debris, unwanted weed growths etc for laying out the specification for planting of different species.
- c) Contour trenches will be dug out to conserve moisture in dry areas.
- d) Drainage will be provided in wet areas to save the plants from flood and excessive moisture areas.
- e) In steep slopes in the uphill and downhill side (where ever possible) of the road simple contour terraces along the contour will be dug out to reduce the run-off discharge and soil erosion.
- f) Treatments of soil with organic manure, insecticides, bio-fertilizer etc will be done if necessary.
- g) In the process of site selection important existing sites of Devithan (Relic Forest Spot), Natural Falls, Rocky Outcrops, Caves, Flanks Areas, View Points adjoining to the road will be included for development for religious, cultural, recreational, and beautification purpose to induce the tourist attraction.

5.4 Seedling requirement:

The linear measurement per kilometer = 1000 meters, 30% area is deducted which is not fit for creation of avenue plantation due to rocky out crop, steep slopes, jhoras, streams, landslide etc. Therefore $1000 - 300 = 700$ mts. (Taking both sides of the road having 50 mts or roads having sufficient space. from the center of the road in two rows on each side) area has been considered for plantation.

Seedling required for 700 m Or $\frac{700 \times 2 \times 2}{2} = 1400$ seedling per km.

Required Tree species $= \frac{700 \times 2 \times 2}{6} = 467$

Required Ornamental, bushy, Flowering species = $1400 - 467 = 933$

5.5 Soil Working.



The success of plantation will solely depend on proper scientific system of soil working. The technique of soil working depends upon climate, soil conditions, slope of the land and various other factors. The following types of soil working will be taken up for creation of avenue plantation and plantation in vacant lands.

- a) Generally the pit size will depend upon species to be planted and its height. For avenue plantation of saplings having 2'5" height 2'x2'x2' is recommended. In case of tall saplings 3'x3'x3' pit size is appropriate. For planting ornamental shrubs, Bushes and other flowering plants 1'x1'x1' to 45cmx45cmx45cm size pits are recommended depending on their size. All the pits will be dug in staggered manner if it is a four lane plantation.
- b) Simple contour trenches along the contour will be dug out in the steep and moderate slopes in two rows along both sides of the road having size of 45 cm width with the inner slope, where plantation of perennial flowers, herbs, shrubs, creepers and conifers shall be taken up. It is also proposed to encourage the growth of Epiphytes on the suitable trees along the roads.
- c) Double trench and trench-pit method of soil working will be dug out in cases of badly stony and detritus slopes which contains small amount of soils. A trench is also dug out around the pits so that maximum accumulation of water takes place in the root zone.
 - Total soil working is proposed in case of
 - Mass plantation of perennial evergreen bulbous spp.
 - Other evergreen ground cover plants/ Floor plants

5.6 Application of Organic and inorganic fertilizers.

It is proposed to add organic and inorganic manures in the poor soil condition areas for ensuring good survival conditions, and fast development of root system so that the plants can establish in desirable time. Insecticides, anti-pathogens will be applied if necessary to control termites, pathogens etc. Compost pits will be dug out for preparation of compost in different spots to supply the required organic manures in the pits before the saplings are planted. Territorial Division of the concerned district has to procure the same subject to supply at the site.

At site cost of manure is fixed at Rs 10.00 for each pit of tree species and Rs 5.00 for the other species. It includes the cost of transportation to the site and preparation of Oilcake for speedy growth.

Manure

- *Conventional cow dung*
- *Composite manure*
- *Oilcake, Vermi-compost, Jungle manure*

5.7 Stacking.



After the site selection and preparation, proper spacing for planting of sapling will be measured and fixed by laying out bamboo sticks.

5.8 Spacing.

The availability of space and land on the roadside are generally not evenly distributed due to different form of terrain, aspect, topography, slopes etc that may create difficulty for right choice of planting pattern. The distance between plant to plant for raising tree plantation has to be maintained. Selection of proper spacing is one of the most important decisions before raising avenue plantation. Since the land on road sides are vulnerable and poor in nutrients the care will be taken for choice of species considering the following aspects like growth rate of the species, cost, availability of nutrients and moisture, weed growth, object of management etc. Usually the wider spacing is preferable for ever green, flowering, and ornamental light demander trees, shrubs and herbs. For ornamental purpose we may also raise perennial, biennial, annuals, creepers and dwarf conifers.

- If the Place is available two rows plantation is proposed on each side of the road, 6x6 mt for tree species and 2x2 mt for perennial herbs and shrubs. It is proposed to maintain 3mt distance in between two rows. Pit digging will be in staggered manner.
- If the space is less single row plantation is proposed on each side of the road 3x3 mt for tree species and 1x1 mt for perennial herbs and shrubs
- It is proposed to plant perennial flowering species, encourage Epiphytes growth on the existing trees along the roads, turfing with suitable grasses where ever possible to add extra beauty to the roads.

5.9 Planting Pattern.

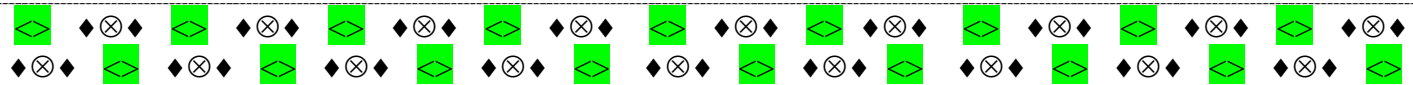
However the most common patterns of planting trees and other saplings of flowering and ornamentals will be taken in staggered manner. The numbers of plants for each lane shall be determined on the basis of space availability. As much as possible, such species will be raised that will give extra beauty to the roads. The following pattern has been suggested for creation of green belt along both sides of the road: -

- a) Ornamental flowering plants perennial flowering herbs, creepers; conifers will be planted in the front row of the downhill side. Bulbous perennial evergreen flowering species should be planted in the first row of the up hill side of the road. Medium height trees and shrubs of evergreen and flowering plants, creepers, conifers should be planted in the second row of the uphill and also tall trees in the down hillside. It helps (i) to reduce thinning of trees on the roadside when it is matured (ii) to create a profile of tall trees in the backside of downhill side of the road which will not disrupt light condition to the smaller plants, (iii) to reduce dust pollution to the neighboring human habitation, (iv) to give more beauty to the roads.
- b) In between bushes and shrubs, it is proposed to plant bulbous perennial evergreen ornamental species on the uphill side subject to the suitability and availability of the land.
- c) Epiphytes will be planted on the trees where ever possible.
- d) Turfing with suitable grass species will be done.

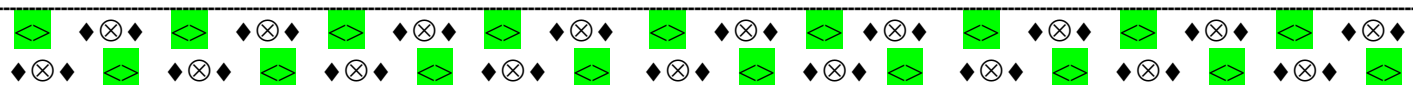







In the Flank, Rocky Outcrop Devithan, Natural View Point areas, on both sides of the roads will be developed as recreational gardens and heritage centers by providing extra beauty.

MODEL PROPOSED FOR THE ROADS HAVING SPACE FOR TWO LANE PLANTATION



ROAD



- INDEX:**  6meters  (TREES)
 2meter  (ORNAMENTAL/SHRUBS)
 Evergreen Perennial Sps Where ever possible



5.10 Implementation period

It is proposed to cover all the state with in three years right from 2006-07 to 2008-09

- In Three Phases
 - Phase – I - 2006-07
 - Investing for production of sapling(through departmental nurseries) for Phase I and II
 - Finalize the target for Phase I and II.
 - Site selection/Soil working
 - 20 % of the plantation target or maximum up to 10 km in a constituency will be taken up
 - 20 ha block Ornamental plantation
 - Phase – II -2007-08
Details of the area will be reflected in the District DPR after consultation with the H/area MLA and the Public.
 - Active Phase
 - 50 % Plantation target
 - Maintenance of plantation along with the Phase I plantation
 - Phase – III -2008-09
Details of the area will be reflected in the District DPR after consultation with the H/area MLA and the Public.
 - Final phase
 - 30 % Plantation target
 - Maintenance of plantation along with the Phase I and II plantations.

5.11 Special programme

Programme of Mass propagation of March-flowering Cherry (Geyzing type), Tree-Fern plantation along the streams and waterfalls, Introduction of *Paulonia* species, Mass plantation of *Eucharis*, *Zephranthes*, *Ophiopogon* etc wherever suitable space is available, Raising of Alpine plants suitable for avenue purpose, Special nursery for raising Rhododendron for alpine land scapes.

5.10 Supply of seedlings

- Success of aesthetic forestry plantation solely depends on superior quality planting materials. Generally in these schemes we need trees species of flowering plants, shrubs, herbs, perennial, biennials, annuals flowers, conifers, ornamentals, evergreen foliage, hedge plants etc for which intensive management system with maximum nursery technical input is required. So the concept of MODERN NURSERY has been evolved by adapting new techniques for production of best quality seedling for raising in the project areas. 30% nurseries to be set aside to raise seedlings for the second and third phase of plantation. Nursery, after receiving financial assistance from this mission should generate a minimum 40,000 numbers of seedlings from each ha. Special nursery for alpine plants should be created by converting high altitude nursery.



However the following provisions for procurement of seedling from outside the departmental nursery will be made for the first year of plantation i.e. 2006-07.

- Placing demand for certain avenue species outside state
- Procurement from community and private nurseries of Sikkim
- Where ever possible/suitable Rhododendrons, Paulonia and other ornamental saplings should be planted.
- On an average a lump sum of Rs 7/- for tree species and Rs 10/-for high altitude species, ornamental plants and Shrubs is kept. With in this provision Division has to procure above mentioned expensive saplings for suitable areas.

5.11 Cost of the saplings for avenue plantation to deliver at site

Flowering tree saplings will be grown in the departmental nurseries so as to provide a minimum of 40,000 saplings per hectare of nursery area in 2007 and similar number in 2008. The cost of the sapling as fixed by Government for procurement for the state green mission, will be used for nursery maintenance of those nurseries from where saplings will be procured for the green mission work. It is proposed to procure saplings from 30 ha of such nurseries @ 40,000 saplings per ha of nursery area per year in 2007 and 2008. Requirement of saplings over and above will be met from procurement from private sources at the procurement price fixed by the Government. Tall saplings will also be raised through Forest Chowkidars and laborers by issuing large poly bags measuring 13"x13", and the poly bags measuring 6"x8" to raise the seedlings in the nurseries will be procured centrally from the head office

In case of non-availability of saplings in the departmental nurseries DFO(T) concerned can procure the required seedlings through open tender/ quotation for polybags seedlings for tree species and other avenue plants by giving measurements. In case the procurement done by tender/quotation seedling delivery should be at the site

- Quality Saplings
 - 2.5 feet and above
 - Only poly bag sapling will be used for plantations in 2007 and 2008.
- All plantation supervisors/ Chowkidars to be given the responsibility of raising at least 50 saplings in big poly bags.
- All Forest officers should raise at least five no's of saplings having the height of 3' in the supplied polybags by the department, as a support to the State Government's Green mission.

6. Steps to be taken at the time of Plantation

At the time of plantation following points are to be take in to consideration for ensuring better survival of plantation.

- (i) The transportation of the planting materials should be done very carefully to avoid damage to the polybag grown saplings.
- (iii) The soil must be thoroughly firmed around the plant by heeling or foot pressure.
- (iv) The imperviuos plant containers like polythene pots should be removed before planting.



- (v) Since the roadsides are very poor in soil condition the planting should be done deeper in the pits of furrow bottom so that maximum water is available to the plant.
- (vi) Break up of heavy clay soils make them drain more freely and easy to work; it will also mean easier root penetration which will help to unlock the abundance of nutrients in the soil.

7. Creation and development of Recreational garden.

If there is any special budgetary provision in the Tourism department, it is proposed that sites will be prepared for development of recreational garden in the flank areas and turning points of road where broader area is available. We can take up two to three spots in each constituency (Tourism department has to transfer the required funds to the Forest department to avoid the procedure of Forest land diversion). Group of conifers, perennials evergreen ornamental foliage's, shrubs, bamboos will be planted by laying garden and landscaping. Provisions for fixing of benches for visitors and tourists are proposed within the recreational garden. Toilet facilities will be provided. Water supply for drinking water will be provided. Bridle path with flat stone pavement will be constructed. If the area is sufficient ponds/water bodies will also be created. Maximum technical inputs and improved technologies will be provided for ensuring success of plantation and development of other activities in the recreational garden. If funds are available, the Tourism department can inform the Forest department for further procedures like submission of estimates etc

8. Display of Signboards.

Large size sign boards with steel frame (6'x4') with names of the local GTF officials, No of saplings planted, Date of plantation, officials responsible for its protection.

9. Protection.

Protection from adverse climatic conditions like drought, hailstorms, cattle grazing, human interferences, and wild animals is a must for ensuring good survival rates. Resistant species against the adverse climatic condition and cattle grazing will be advisable. To overcome the problems of cattle grazing and other biotic interferences it is proposed to provide Social fencing by involving the following

- Voluntary organizations
- Through existing infrastructure/Labour in the Govt
- JFMC's, EDCs, SHG's and other clubs in the state

District level committee has to coordinate for future protection

10. Monitoring & Evaluation.

The internal monitoring will be carried out by the Officer of the Constituency level committee and the district officials from the Forest, Env. and Wildlife management Department. The State level monitoring committee for this purpose will be constituted by the PCCF- cum Secretary in consultation with the State level committee. To look after the overall plantation works, it is proposed to deploy one Addl. Principal Chief Conservator of Forests (APCCF) to



each district. The APCCF shall report to the PCCF cum Secretary regarding the progress. To achieve a fair degree of success each member of the Forestry organization shall be actively involved for attaining the goals of the mission.

11. Budgeting Financial Forecast.

The budget provision for the various activities under the project will be made from the state plan under appropriate Head of Accounts. The cost norms and the basis of expenditure have been prepared on the basis of the Forest and SPWD schedule of rates.

In the financial year 2006-07 State Government has allocated Rs 2.00 crores for first phase under state plan. Since the proposed task has been divided into three phases it has been proposed to set aside an amount of Rs 55.00lakhs as an advance to raise seedlings for second phase plantation in the selected nurseries for this purpose by the department. Breakup of the amount allotted in first phase is given below.

Fund allocated for first phase= 2.00 crores
Fund set aside for second phase seedlings= 0.55 crore
Fund required for Namchi Rock Garden= 0.08 crores
Fund required for poly bags and seeds for IInd and IIIrd phase seedlings = 0.1572
Fund required for 20 ha block plantation in and around Gangtok (15ha) and Namchi(5ha) @ Rs 35578/- per ha=0.0711560
Fund available in the first phase= 2.00-0.8583= 1.1417 crores

Avenue plantation works proposed in Ist phase

Area proposed for plantation in each constituency = 10 km
Total no of constituencies= 32
Total area for plantation in 1st phase = 320 km
Fund required for low altitude areas= 300km x Rs35578.00 = 1,0673400.00
Fund required for High altitude areas= 20 km x Rs37217.00 = 744340.00
Total 1,14,17740.00

Funds for avenue plantation according to the approved basis will be transferred to the concerned DFO's to their respective accounts(if agreed to their FDA accounts). Disbursement should be made as per the provisions of Sikkim Financial rules.

It is to inform all the State Government officers that the efforts should be made to arrange collateral funds from other sources like IWDP, RMDD, and other centrally sponsored schemes to achieve the objectives of this mission.



WORK PROGRAMME AND COST SCHEDULE FOR CREATION AND DEVELOPMENT OF ONE KM AVENUE PLANTATION/ ONE HA ORNAMENTAL PLANTATION UNDER STATE GREEN MISSION IN THE FIRST PHASE.

Sl.No	Name of the item	L/A	H/A
1	Cost of seedlings 467 Tree sps @ Rs 7/- +933Ornamental shrubs @ Rs 10/- nos (For high altitude species). Collection and carriage of poly bag seedlings from nursery to plantation site	3269+9330 12599.00	14000.00
2	The site supply and carriage of manure by head load Mixing of manure with soil in planting of seedlings for1400 pits @Rs10.00/ pit/tree sps.Rs 5.00/pit /other sp	4,670+4,665 9335.00	4,670+4,665 9335.00
3	Cost of Site preparation , Digging of pits and plantation	Met from existing Govt labour force and Shramdhan of Volenteers	
4	Providing bulbus, Perennial evergreen herbs, Epiphytes and flowering plants including surfing(where ever possible) including manure on site L.S	5,000.00	5,000.00
5	Cost of seedlings for casualty beating at the time of First weeding during September @ 10% of the total i.e 140	Met from the existing Forest nurseries	Met from the existing Forest nurseries
6	Cost of the seedlings for second year casualty filling 25% of the total seedlings	Met from the existing Forest nurseries	Met from the existing Forest nurseries
7	Second year manuring to the seedlings 25% of the initial cost	2334.00	2334.00
8	Cost of the seedlings for third year casualty filling 10% of the total seedlings	Met from the existing Forest nurseries	Met from the existing Forest nurseries
9	Third year manuring to the seedlings 10% of the initial cost	933.00	933.00
10	purchase of implements.	1,000.00	1,000.00
11	Sign board (6'x4')	2,000.00	2,000.00
	Totl	33201.00	34602.00
12	Contingencies 10% of the total including the transportation of the laborers, Technical heads and other office expenses	3320.00	3460.00

13	Publicity and awareness raising i.e 5% Of the total	1660.00	1730.00
14	Monitoring and Evolution i.e 2% of the total	664.00	692.00
	Grand Total	38845.00	40484.00

Note:- Sl. No 7 and 9 will be projected in the second and third phases of plantations respectively and transfer to the Divisions accordingly for work execution

Amount proposed to be transferred in 1st phase to execute the avenue plantation works under State Green Mission in this financial Year is

Rs 35,478.00 for Low altitude And
Rs 37,387.00 for High altitude

Hon'ble Forest Minister cum Vice-Chairman
State Green Mission
Govt of Sikkim

PCCF cum Secretary
Forest Environment and WL mgmt
Deptt
Govt of Sikkim



SPECIES RECOMMENDED FOR STATE GREEN MISSION

Altitude 2000' – 5500'

Trees

Aesculus indica
Cassia fistula
Cassia nudusa
Erythrina soberrosa
Lagerstromia flosreginae
Emblica officinalis (Amala)
Bauhinia spp. (Tanki)
Alstonia scholaris (Tanki)
Paulonia fortunei (Chinese teak)
Paulonia elongate (Chinese teak)
Paulonia fortunei (Chinese teak)
Tamarix indica
Tree ferns
Callistemon
Jaccaranda mimosifolia
Syzygium cumini (Jamun)

Shrubs

Magnolia lilliflora
Cycos
Gaikhuray Fern
Datura Pink
Tecoma stans
Hydrangea
Hibiscus
Euphorbia pulcherrima
Bougainvillea
Allemanda
Cestrum
Ixora stricta
Plumeria (Temple tree)
Yesterday, today & tomorrow
Saraca indica (Ashoka)

Bulbous & herbal plants

Eucharis
Nerium
Zephranthus robusta
Costus speciosus
Hemerocallis
Ophiopogon

Orchids

Dendrobium spp.
Cymbidium longifolium

Altitude – 5500' – 7000'

Trees

Prunus cerasoides (Paiyu) October flowering
Prunus Gayzing Type March flowering
Cedrella Toona
Michelia excelsa
Rhododendro arboretum
Symingtonia populnea (Pipli)
Aesculus indica
Paulonia fortunei
Salix Babylonica
Tree ferns

Shrubs

Mahonia napaulensis
Hypericum spp.
Hydrangia
Magnolia grandiflora
Laculia gratissima
Viburnum spp.
Tibouchiana
Spiraea
Ardisia
Euphorbia pulcherrima
Jasminum

Bulbs & herbal plants

Agapanthus
Bergenia species for walls
Zephranthus robusta
Hedychium species

Orchids

Coelogyne Cristata, *Cuelogyne nitida*
Coelogyne ochracea for walls and rocky
area

Altitude 7000; - 10,000'

Magnolia cambelli
Acer species
Juniperous recurva
Juniperous Pseudosabina
Larix griffithii
Tsuga brunoniana
Populus ciliate
Salix babylonica
Prunus spps.

Shrubs

Hypericum spps.
Rhododendron spps.
Luculia gratissimum
Viburnum spps.
Enkianthus campanulata
Rosa candita
Hydrangia
Magnolia lilliflora
Pieris spps.
Spiraea (April fool)

Bulbous & herbal plants

Lupins
Bergena for walls
Arisaema spps.
Hemerocalis
Cardiocrinum giganteum