GOVERNMENT OF RAJASTHAN

Vision Document

For

ENHANCING THE FOREST

&

TREE COVER IN NON FOREST AREAS IN RAJASTHAN

FOREST DEPARTMENT

RAJASTHAN

Preface

Rajasthan is the largest state of the country with 61% of the Thar Desert lying in it and having second largest live-stock population in the country. Coupled with harsh climatic conditions and heavy grazing pressures, the forest resources of Rajasthan have suffered degradation and loss of natural regeneration.

It may not be emphasised that forestry is the first and foremost requirement for survival and sustenance of life on the earth that it has proved to be the life-line for all particularly the tribal people. As envisaged in the National Forest Policy 1988, the forest and tree cover of the state should be 33%, but, the in hospitable climate and edaphic conditions come in the way of the state to have more than 20% vegetal cover of the geographical area of the state. This is only possible by taking massive plantation programmes on fallow lands, waste lands, surplus revenue lands, community lands, degraded private lands and by effectively protecting the existing natural resources. It has been realized that forestry cannot succeed in the state without involvement of the local people and various other government and non- government agencies.

Keeping in mind the challenges of climate change, soil erosion, erratic rainfall, recurrent droughts, fast depleting ground water and to achieve the target of 20% of the geographical area under forest and tree cover, this vision document has been visualized with the broader frame work of achieving the planting targets of 35747 sq.km of non-forest areas within next fifteen years, for which budgetary provisions, extra man-power and massive public support is required. Effective leadership and mass movement are required to achieve the goal.

CHAPTER I

Land use –A variety of land use patterns in the state exhibit the availability of soil and water resources in that area and the human endeavors to harness them. The land use pattern is given in the table below –

S.No.	Land use	Area (in Sq.Km.)
1	Total Geographical Area	3,42,239
2	Reporting area for land utilization	3,42,239
3	Culturable land	2,05,283
4	Unculturable land	39877
5	Forest land	32701
6	Pasture land	16978
7	Govt. Revenue land	41231
8	Waste lands	39184

Since, the forest land is only 9.56% of the total geographical area and the vegetal cover of the State is only 7.11%, hence, the total requirement of the land which should be under vegetal cover to reach the 20% target as per State Forest Policy, 2010 is 68448 Sq Km. At present we have only 32701 Sq.Km forest area and we need at least 35747 Sq.Km. additional non-forest areas to be brought under vegetal cover.

Therefore, the waste land under the ownership of the Government, communities and private persons is needed to be brought under vegetal cover to reach the 20% target of the land area of the state under Forest and Tree cover.

CHAPTER – II

Proposed Areas –

It is proposed that all the 33 districts of the state should be covered under the scheme with special emphasis on Western Thar Desert and the Border Areas of the state.

The total area of the Thar Desert is around 3.18 lac Sq.Km and spreads over Punjab, Haryana, Rajasthan and Gujarat states. Its major and most arid portion lies in Rajasthan, spreading over 12 districts of the state, which is 2.08 lac Sq.Km, out of this 1.42 lac Sq.Km i.e. nearly 68% area falls in the Hyper-arid and Arid Zone. This highlights the magnitude of the problem. Since this area falls in less than 100 mm. rainfall zone, afforestation without watering is not a sound proposition. These areas could be put to productive use only by providing intensive inputs and scientific management of livestock which requires higher investments. Since IGNP has widespread network in this area, the untapped potential of the area for biomass production with native plant species could be explored. This will also provide an opportunity to rehabilitate African Cheetah in this region.

It is also proposed that private lands should also be covered under agro-forestry model to enhance the forest and tree cover in the state. Besides revenue waste lands, common lands and private lands, road-sides and railway-lines should also be covered under this scheme.

Since, vast tract of the State is desert and semi-desert; emphasis is given on checking the desertification by sand dune stabilization. The northern and western part of the State is also having a large network of Indira Gandhi Nahar Pariyojana (IGNP).It is also proposed to cover the Canal Sides by planting suitable indigenous plant species.

In IGNP area, settlement and colonization is going on and new colonies are coming up. So, Block Plantations (BP) should also be taken up in the newly settled habitations.

Thus, the area to be treated under the new scheme can be categorized as follows:-

1. *Western Desert Part of the state*- includes district of Bikaner, Churu, Hanumangarh, Shri Ganganagar, Barmer, Jaisalmer, Jodhpur, Pali, Jalore, Nagaur, Sikar and Jhunjhunu. Revenue wasteland & community land vested with public authorities form a big chunk of land resources for large scale afforestation/ pasture development activities.
2. *Areas along the National Highways, State Highways and Major Roads and also along the Railway lines* would be taken up for planting the suitable tree species.
3. *Wind Breaks* – Rajasthan state shares a long international boundary with Pakistan, which is 1070 Km. long and known as Radcliff Line. Efforts should be made to create the wind breaks along this line in consultations with the Army and the BSF.
4. *Agro-Forestry* –In Western Rajasthan due to sparse vegetation, the organic-matter is not adequate in the soil, hence, the soils are less productive. The agro forestry model should be applied to such lands to enhance the soil productivity and also to check the erosion of soil by wind. The agricultural fields should have trees on bunds to increase the leaf-litter and to provide the green cover.

Since, major part of the land is with private persons for agricultural purposes, the farmers should be motivated through ENTRY POINT ACTIVITIES to adopt the agro-forestry model.

5. *Urban Forestry* – The urban and peri-urban institutional lands should be covered under this scheme to bring them under tree cover.

6. *Treatment of Watersheds and Catchment areas* – The state has large number of river systems such as Chambal, Banas, Mahi etc. Though a large number of watersheds/sub-watersheds have been covered under various schemes, it is proposed that Government should issue an order to have mandatory afforestation in every watershed.
7. *Canal side* – Since, North-western part of the state has a wider network of IGNP Canal and its distributaries. It is also proposed that the areas along these canals be covered under this scheme.
8. *Development of Grasslands:* The pasture lands will be developed by applying ***silvi-pasture model***. Under this category, existing pastures will be selected for improvement and enrichment.

Objectives

The objectives of the scheme are as follows:

1. To restore the ecological status by intensive reforestation and *in situ* soil and moisture conservation to maintain the soil-moisture regime.
1. To protect the infrastructures like canals, railway lines, roads, agricultural fields, human settlements from drifting sand.
2. To conserve the gene-pool and improve the biodiversity of flora and fauna.
3. To augment the availability of fuel-wood, fodder and minor forest products in the State.
4. To generate employment opportunities to the rural/tribal population, thus improving their socio-economic condition.
5. To elicit peoples participation and involvement of institutions of Local Governance and other government departments to make this programme success.
6. To achieve the goal of 20% of the geographical area under vegetal cover within reasonable time frame as envisaged by the State Forest Policy, 2010.

7. To mitigate the climate change impacts and also to enhance the carbon stocks.
8. To increase the supply of the organic matter in the form of leaf litter to maintain fertility, structure and water holding capacity of the soils to ensure food security.
9. NTFP/Biomass Based Community Livelihoods – To encourage the local farmers for adopting agro forestry model, establishing the NTFP and Biomass based micro enterprises for sustainable use of usufructs.
10. **Phasing of the Activities**

The afforestation activities would be implemented in a phased manner and the available areas would be treated in 3–phases of 5 years each. The Phase-I would be from financial year 2010-11 to 2015-15.

The area to be treated in each phase is shown as below:-

1. Phase – I (From Financial Year 2010-11 to 2014-15) - 12000 sq.km.
2. Phase – II (From Financial Year 2015-16 to 2019-20) - 12000 sq.km.
3. Phase- III (From Financial Year 2020-21 to 2024-25) - 11747 sq.km.

In Phase-I, 12000 sq.km. i.e. 12.00 lac ha non-forest area has been proposed for planting, soil moisture conservation measures and other cultural operations. The physical targets and cost estimates including the cost of Entry Point Activities for the financial years 2010-11 to 2014-15 are shown in Annexure-I.

Managing Plantations through Watershed Committees:

The involvement and participation of local villagers is must to make the plantations successful in isolated scattered places. To get people's participation for executing and protecting the plantation sites, it is envisaged that this programme be implemented through Gram Panchayats and they should work as Project Implementing Agencies (PIAs).At village level Self Help Groups (SHGs),User Groups (UGs) and Watershed

Committees (WCs) would be constituted with the help of Watershed Development Team (WDT).

The Watershed Committee (WC) would be constituted by the Gram Sabha and it has to be a registered body as per the Common Guidelines issued by Ministry of Rural Development, Government of India.

It has been proposed that this programme be implemented through Panchayat Raj Institutions (PRIs) and other government agencies by adopting common guidelines of Government of India. The institutional arrangement at the district level is given below:-

Institutional arrangements at District Level:-

District Watershed Development Unit (DWDU)

In districts, where the area under the watershed development projects is about 25,000 hectare, a separate dedicated unit, called the District Watershed

Development Unit (DWDU) will be established at the district level, which will oversee the implementation of watershed programme in each district and will have separate independent accounts for this purpose. Where the area under Watershed Development Projects is less than approximately 25,000 hectare, the projects will be implemented in accordance with the existing arrangements. However, in such cases one officer shall be exclusively appointed within the DRDA either on contract or on deputation to coordinate watershed projects at the district level. DWDU will function in close co-ordination with the District Planning Committee. There will also be a representation in DWDU for NREGA, BRGF implementing agencies at the district level. Alternatively, the mechanism of approval and implementation of project by the District Level Committee / collector may continue to prevail.

DWDU will be a separate unit with full time Project Manager and 3 to 4 subject matter specialists on Agriculture/ Water Management / Social/ Mobilisation/Management & Accounts appointed on the basis of their qualification and expertise on contract/deputation/transfer etc. The Project

Manager, DWDU would be a serving government officer on deputation or would be recruited from open market by means of a transparent process. If he/she is a serving Government officer, his/her posting will be done by the State Government. If open market recruitment is necessary, this will be done by the SLNA. The Project Manager, DWDU will sign a contract (for a period not less than three years) with SLNA that will spell out well-defined annual goals, against which his/her performance will be consistently monitored. The arrangements for setting up/ strengthening the DWDUs/District Data Cell will be financially supported by the Government of India after review of available staff, infrastructure and the actual requirement.

The functions of DWDU will be as follows:

1. Identify potential Project Implementing Agencies (PIAs) in consultation with SLNA as per the empanelment process as decided by the respective state governments.
2. Take up the overall responsibility of facilitating the preparation of strategic and annual action plans for watershed development projects in respective districts.
3. Providing professional technical support to Project Implementing Agencies (PIAs) in planning and execution of watershed development projects.
4. Develop action plans for capacity building, with close involvement of resource organizations to execute the capacity building action plans.
5. Carry out regular monitoring, evaluation and learning.
6. Ensure smooth flow of funds to watershed development projects.

7. Ensure timely submission of required documents to SLNA / Nodal Agency of the Department at central level.
8. Facilitate co-ordination with relevant programmes of agriculture, horticulture, rural development, animal husbandry, etc with watershed development projects for enhancement of productivity and livelihoods.
9. Integrate watershed development projects/ plans into District Plans of the district planning committees. All expenditure of watershed projects would be reflected in district plans.
10. Establish and maintain the District Level Data Cell and link it to the State Level and National Level Data Centre.

Role of Panchayati Raj Institutions at district and intermediate Levels:-

The full responsibility of overseeing the watershed programme within the district will lie with the DWDU which will work in close collaboration with the District Planning Committee (DPC). The DPC will provide full governance support to the programme. The DPC will approve the perspective and annual action plans relating to watersheds projects in the district. DPC will integrate the watershed development plans with over all district plans and also oversee its implementation. DWDU will help the DPC in providing oversight and ensuring regular monitoring and evaluation of the programme. The District Panchayat / Zilla Parishad will have an important role of governance in matters relating to the co-ordination of various sectoral schemes with watershed development projects, review of progress, settling disputes etc. Where the Panchayat system is not in operation, this role will be played by the DWDU/District Autonomous Councils.

Similarly, Intermediate Panchayats have an important role in planning the watershed development projects at the intermediate level. They can also provide valuable support to PIAs and Gram Panchayats/ Watershed

Committees in technical guidance with the help of their subject matter specialists.

Institutional Arrangements at Project Level:-

1. Project Implementing Agency (PIA):

The SLNA would evolve appropriate mechanisms for selecting and approving the PIAs, who would be responsible for implementation of watershed projects in different districts. These PIAs may include relevant line departments, autonomous organizations under State/ Central Governments, Government Institutes/ Research bodies, Intermediate Panchayats, Voluntary Organizations (VOs). However, the following criteria may be observed in the selection of these PIAs:

- They should preferably have prior experience in watershed related aspects or management of watershed development projects.
- They should be prepared to constitute dedicated Watershed Development Teams.

Voluntary Organizations (VOs) will have an important role in the programme and their services will be utilized substantively in the areas of awareness generation, capacity building, IEC and social audit among others. As far as direct implementation of the programme is concerned, Voluntary Organizations (VOs) with established credentials may be chosen as PIAs on the basis of detailed criteria as enumerated below.

1. The Voluntary Organizations (VOs) would need to satisfy the following criteria to be selected as PIA:
    a. Should be a registered legal entity of at least 5 years standing.
    b. Should have had at least 3 years of field experience in the area of community based Natural Resource Management and livelihood development.
    c. Should not have been blacklisted by CAPART or any other Department of Government of India or State Government.
    d. Should be equipped with a dedicated, multidisciplinary team with gender balance.

e. Should furnish three years balance sheet, audited statement of accounts and income returns. All accounts of the organization should be up to date.
f. Should furnish the profile of its Board of Directors.
g. Should have successfully implemented projects independently.

2. It will be subjected to the following conditions:

a. At any point of time, one VO cannot be assigned more than 10,000 ha area in a district.
b. At any point of time, one VO cannot be assigned more than 30,000 ha area in a State.
c. In any case, not more than 1/4th of the total Projects at a time in a State to be implemented by VOs.

Selected PIAs will sign a contract/MOU with the concerned DWDUs/ District Level Committee as referred in para 29 that will spell out well-defined annual outcomes, against which the performance of each PIA will be monitored each year and evaluated on a regular basis by institutional evaluators from a panel approved by the SLNA / Departmental Nodal Agency at the central level.

Each PIA must put in position a dedicated watershed development team (WDT) with the approval of DWDU. The WDT will be hired on contract / deputation / transfer etc for a term not exceeding the project period. The composition of the WDT will be indicated in the contract/ MOU. No programme funds for DPR and watershed works under any circumstances should be released to either the PIA or Watershed Committee (WC) unless the composition of the WDT has been clearly indicated in the MOU/ contract and the team members are fully in place.

2. Roles and Responsibilities of the PIA:-

The Project Implementing Agency (PIA) will provide necessary technical guidance to the Gram Panchayat for preparation of development plans for the watershed through Participatory Rural Appraisal (PRA) exercise,

undertake community organization and training for the village communities, supervise watershed development activities, inspect and authenticate project accounts, encourage adoption of low cost technologies and build upon indigenous technical knowledge, monitor and review the overall project implementation and set up institutional arrangements for post-project operation and maintenance and further development of the assets created during the project period. The PIA, after careful scrutiny, shall submit the Action Plan for Watershed Development Project for approval of the DWDU/DRDA and other arrangements.

The PIA shall submit the periodical progress report to DWDU. The PIA shall also arrange physical, financial and social audit of the work undertaken. It will facilitate the mobilization of additional financial resources from other government programmes, such as NREGA, BRGF, SGRY, National Horticulture Mission, Tribal Welfare Schemes, Artificial Ground Water Recharging, Greening India, etc.

3. Watershed Development Team:

The WDT is an integral part of the PIA and will be set up by the PIA. Each WDT should have at least four members, broadly with knowledge and experience in agriculture, soil science, water management, social mobilisation and institutional building. At least one of the WDT members should be a woman. The WDT members should preferably have a professional degree.

However, the qualification can be relaxed by the DWDU with the approval of SLNA in deserving cases keeping in view the practical field experience of the candidate. The WDT should be located as close as possible to the watershed project. At the same time, it must be ensured that the WDT should function in close collaboration with the team of experts at the district and state level. The expenses towards the salaries of

the WDT members shall be charged from the administrative support to the PIA. DWDU will facilitate the training of the WDT members.

4. Roles and Responsibilities of WDT:

The WDT will guide the Watershed Committee (WC) in the formulation of the watershed action plan. An indicative list of the roles and responsibilities of the WDT would include among others, the following.

a. Assist Gram Panchayat / Gram Sabha in constitution of the Watershed Committee and their functioning.
b. Organizing and nurturing User Groups and Self-Help Groups.
c. Mobilising women to ensure that the perspectives and interests of women are adequately reflected in the watershed action plan.
d. Conducting the participatory base-line surveys, training and capacity building.
e. Preparing detailed resource development plans including water and soil conservation or reclamation etc. to promote sustainable livelihoods at household level.
f. Common property resource management and equitable sharing.
g. Preparing Detailed Project Report (DPR) for the consideration of Gram Sabha.
h. Undertake engineering surveys, prepare engineering drawings and cost estimates for any structures to be built.
i. Monitoring, checking, assessing, and undertaking physical verification and measurements of the work done.
j. Facilitating the development of livelihood opportunities for the landless.
k. Maintaining project accounts.
l. Arranging physical, financial and social audit of the work undertaken.
m. Setting up suitable arrangements for post-project operation, maintenance and future development of the assets created during the project period.

Institutional Arrangements at the Village Level and

People's Participation:

1. Self Help Groups

The Watershed Committee shall constitute SHGs in the watershed area with the help of WDT from amongst poor, small and marginal farmer households, landless/asset less poor agricultural labourers, women, shepherds and SC/ST persons. These Groups shall be homogenous groups having common identity and interest who are dependent on the watershed area for their livelihood. Each Self Help Group will be provided with a revolving fund of an amount to be decided by the Nodal Ministry.

2. User Groups

The Watershed Committee (WC) shall also constitute User Groups in the watershed area with the help of WDT. These shall be homogenous groups of persons most affected by each work/ activity and shall include those having land holdings within the watershed areas. Each User Group shall consist of those who are likely to derive direct benefits from a particular watershed work or activity.

The Watershed Committee (WC) with the help of the WDT shall facilitate resource-use agreements among the User Groups based on the principles of equity and sustainability. These agreements must be worked out before the concerned work is undertaken. It must be regarded as a pre-condition for that activity. The User Groups will be responsible for the operation and maintenance of all the assets created under the project in close collaboration with the Gram Panchayat and the Gram Sabha.

3. Watershed Committee (WC)

The Gram Sabha will constitute the Watershed Committee (WC) to implement the Watershed project with the technical support of the WDT in the village. The Watershed Committee (WC) has to be registered under the

Society Registration Act, 1860. The Gram Sabha may elect/appoint any suitable person from the village as the Chairman of Watershed Committee. The secretary of the Watershed Committee (WC) will be a paid functionary of the Watershed Committee (WC). The Watershed Committee (WC) will comprise of at least 10 members, half of the members shall be representatives of SHGs and User Groups, SC/ST community, women and landless persons in the village. One member of the WDT shall also be represented in the Watershed Committee (WC). Where the Panchayat covers more than one village, they would constitute a separate subcommittee for each village to manage the watershed development project in the concerned village. Where a watershed project covers more than one Gram Panchayat, separate committees will be constituted for each Gram Panchayat. The Watershed Committee (WC) would be provided with an independent rented office accommodation.

The Watershed Committee will open a separate bank account to receive funds for watershed projects and will utilise the same for undertaking its activities. The expenses towards the salaries of the WDT members and Secretary of Watershed Committee (WC) shall be charged from the administrative expenses under the professional support to the PIA.

4. Secretary, Watershed Committee:

The Secretary of the Watershed Committee (WC) will be selected in a meeting of the Gram Sabha. This person would be an independent paid functionary distinct and separate from the Panchayat Secretary. He would be a dedicated functionary with no responsibilities other than the assistance to the Watershed Committee (WC) and would work under the direct supervision of the President of Watershed Committee (WC) and would be selected on the basis of merit and experience. The expenses towards the honorarium to be paid to Secretary of Watershed Committee (WC) will be charged from the administrative support to the PIA. The Secretary will be responsible for the following tasks:

a. Convening meetings of the Gram Sabha, Gram Panchyat, Watershed Committee for facilitating the decision making processes in the context of Watershed Development Project.
b. Taking follow up action on all decisions.
c. Maintaining all the records of project activities and proceedings of the meetings of Gram Panchayat, Watershed Committee (WC) and other institutions for Watershed Development Project.
d. Ensuring payments and other financial transactions.
e. Signing the cheques jointly with the WDT nominee on behalf of the Watershed Committee.

5. Role of Gram Panchayat:

The Gram Panchayat would perform the following important functions:

a. Supervise, support and advise Watershed Committee from time to time.
b. Authenticate the accounts/ expenditure statements of Watershed Committee and other institutions of watershed project.
c. Facilitate the convergence of various projects/ schemes to institutions of watershed development project.
d. Maintain asset registers under watershed development projects with a view to retain it after the watershed development project.
e. Provide office accommodation and other requirements to Watershed Committee.
f. Allocate usufruct rights to deserving user groups/ SHGs over the assets created.

Micro-planning & Entry Point Activities (EPAs)-

Of late it has been realized that involvement of local community in the forestry programmes is desirable to make these programmes a success. Generally afforestation activities are opposed by the local villagers due to the closure of areas, restrictions imposed on the grazing and their easy

access to the forest areas for fuel-wood, fodder besides other daily use products.

To mobilize and to overcome the hardships faced by the local community, the concept of Entry Point Activities and other promotional activities was thought of as a remedy. By Entry Point Activities some community Assets are created and maintained by communities themselves. The main objective of Entry Point Activities and other promotional activities is to elicit willing participation of the communities in managing the assets so created jointly with the government agencies and also to win the trust and confidence of the people. In the Entry Point Activities, the developmental activities are decided and maintained by the community as a whole.

Micro-planning has proved a very effective tool to secure community participation in the afforestation activities. Thus, right from the beginning need based and site specific micro-plans should be prepared through Participatory Rural Appraisal (PRA) and their needs should be assessed and Entry Point Activities be decided by the community itself.

Keeping in mind the motivational role of the Entry Point Activities, it has been proposed that the 4% of the budget should be kept for Entry Point Activities (EPAs) along with the afforestation activities based on the common guidelines, 2008. The estimated cost of Entry Point Activities for treating the above mentioned non-forest areas is **Rs 1429.88 crores.** The financial requirement for Entry Point Activities can be met through NREGS.

CHAPTER –III

Technical Strategies

Since different categories of common lands, revenue waste lands, roadsides, railway lines, canal sides etc. will be taken up for afforestation/reforestation activities, it is emphasized that the site selection should be very judicious and based on type of vegetation density class, type of soil and type of activity to be taken up.

Based on the above criteria, it is proposed that the specific site should be treated as per the Models described below:

1. **Sand Dune Stabilization:-**
   - Sandy area with at-least 25% sand dunes.
2. **Panchayat land Plantations:-**
   - Plantations on community lands, where there is acute shortage of fuel-wood and fodder.
   - Sufficient community land should be available for grazing.
3. **Canal Side Plantations:-**
   - Plantations along the main canal, its branches, distributories and minors.
4. **Block Plantations:-**
   - Block Plantations in the command areas of the canal system, which are set apart for new human settlements and afforestation.
5. **Road side/Railway line Plantations:-Shelter Belt:-**
   - Along Road sides and Railway lines plantations as shelter-belts to safeguard roads and railway lines from drifting sand and also to enhance the forest and tree cover.
6. **Wind Breaks:-Shelter Belt:-**

   Wind Breaks along-side the international border with Pakistan based on shelter belt model.

7. **Development of Grasslands*:*** The pasture lands and the grasslands of the state will be developed by applying ***silvi-pasture model***. Under this category, existing pastures and grasslands will be selected for improvement and enrichment.

- The detailed treatment of these categories has been prescribed in Chapter-IV of the document.

TECHNICAL MODELS-

The activities to be undertaken are clearly spelt in the model cost estimates of the respective models. These models are simply guidelines and site treatment may vary as per site requirement. The sites should be selected according to the specific requirements of the respective models. The activities should be taken up in the following sequential order-

- Formation of PIA,WDT and Watershed Committee
- Proper selection of site
- Preparing the Micro-plan of the village and decision of Entry Point Activity.
- Survey of the Area
- Preparing the treatment Plan and cost estimate of the site.
- Execution of the work
- Periodic monitoring of growth and survival of plants

CHAPTER - IV

Issues and Strategies

Rajasthan has marked difference in physiographic features. The Aravallis, one of the oldest mountain systems, divides the state in two unequal parts. Over 30% of the State is covered by Aravallis and a vast expanse of arid and semi-arid tract lie in the west of Aravallis. Hyperthermic conditions prevail in whole of the State and rainfall pattern is very erratic. Under such adverse conditions, vegetative growth is very poor and can mainly support xerophytic vegetation. Only small area in the south west has some forests. In this backdrop, the State faces a challenge of greening it within a reasonable time frame.

Heavy biotic pressure and meagre financial resources and low priority accorded to the forestry sector in the earlier plan periods led to limited achievements in the forestry sector and also in the forest and tree cover of the state.

The vast gap of 35747 sq.km which is to be brought under vegetal cover to reach the 20% mark can be only by taking plantations on the waste lands, pastures and fallow lands and permanent pastures.

Keeping in mind the prevailing hyper-thermic conditions, erratic rainfall, recurrent droughts, fast depleting ground water and climate change, to counter the above mentioned challenges and also to bridge the demand-supply gap of fuel-wood, fodder, and quality timber, it is envisaged that massive afforestation activities be initiated in the state. Hence, in Phase-I of the present scheme (Financial Year 2010-11 to 2014-15), 12.00 lac ha planting be taken up in different categories of land. Hence, this vision document is prepared with the objective to increase the over-all forest and tree cover in the state for sustaining the life on this planet.

The main issues to be tackled are as follows-

- *Restoration of Eco-systems* – Grass lands, wetlands, pastures
- *Checking the drivers of degradation* e.g. livestock, grazing and fire wood needs, industries and mining.
- *Convergence of livestock, forest, agriculture, rural development, energy sector etc.*
- *Ensuring the availability of plants in the departmental nurseries for plantation activities under this scheme.*
- *Establishing the REDD$^+$ cell at the Headquarter* to coordinate REDD$^+$ activities in the state.
- *Incorporating the greening of Rajasthan campaign* with pulp wood & fibrous raw material based manufacturers such as paper, viscose, plywood, furniture, construction poles, tobacco-curing, bio-fuel, pencil and match-box to enhance livelihood opportunities.
- *Encouraging large scale Biomass wood energy plantations*.
- *Involvement of institutions of local governance and other government agencies in the planting programmes.*
- *Policy Change* – There should be change in policy to treat the private lands to benefit the individuals.

So far the major thrust of the government policies is to execute its plantation programmes on the community lands or the government lands. Because of this approach, the individual farmers are not benefited and hence, they do not take interest in the common resources generated through such government programmes. Hence, it is proposed that the state government should change its policy to benefit the individual farmers so that they can allow the Programme Implementing Agencies (PIAs) to plant trees on private lands. The responsibility of protecting these assets created

so should lie with the individual beneficiary and he should be allowed to harvest the crop on sustainable basis.

Treatment –

The different categories of available non-forest areas would be treated by applying the different models as per site quality. The different categories of such areas would be treated as follows-

1. Sand Dune Stabilization in western Rajasthan-

The two-third area of the state is desert with extreme climatic conditions and planting of tree species is a real challenge in western Rajasthan especially the bordering areas. The total area proposed to be covered under Sand Dune Stabilization Scheme in the Phase – I is 6.00 lac ha at the cost of Rs 2728.80 crores. Thus, models suitable to these areas will be adopted for development of this region. By use of new technologies, irrigation, traditional knowledge for water harvesting and involvement of local communities, the vegetal cover of the area will be enhanced.

2. Panchayat Land Plantations-

In most of the villages community and wastelands are available and they are managed by Village Panchayat. These areas are suitable for growing fuelwood and fodder tree species. Afforestation activities will be taken up in these areas in consultation with the Panchayat. The total area proposed to be covered under Panchayat Land Plantations Scheme in Phase– I is 4.00 lac ha at the cost of Rs 2001.40 crores.

3. Canal Side Plantations-

The Indira Gandhi Main canal, its branches, distributaries, minors and sub-minors will be taken up for planting and gap filling on both sides. Emphasis will be given on indigenous timber and fodder species.

The local farmers would be motivated to take up plantations on both sides of the water-courses to check the siltation of these and also to

enhance the tree-cover and organic-matter in the soil. The total area proposed to be covered under Canal Side Plantations Scheme in the Phase-I is 2000 ha. along both sides of the main canal, 1000 ha along distributaries, 3000 ha along the minors at the cost of Rs. 4.44 crores, Rs. 2.17 crores and Rs. 8.68 crores respectively.

4. Block Plantations-

This activity will be taken up in command area of Western Rajasthan where 12 ha abadi (community) land is set apart for raising fuelwood and timber plantations. These plantations will be irrigated plantations. The total area proposed to be covered under Block Plantations in the Phase – I is 1000 ha at the cost of Rs. 7.69 crores.

5. Road side/Railway line Plantations-Shelter Belt:-

The total Road length of the state is 1,86,806 Km., out of which National Highways are 5722 Km., Sate Highways are 11,758 Km. and other major districts roads area 7673 Km. It is proposed that only the National Highways, State Highways and Major district roads having total length of 25,153 Km. would be covered under the scheme.

6. Wind breaks –

The wind breaks will be created along the Radcliff Line which is 1070 km. along the Pakistan Border. These works will be undertaken in consultations with the Army and the Border Security Force. The total area to be covered under this scheme is 88,000 ha in the Phase –I of the document at the cost of Rs 938.61 crores.

7. Grasslands –

Also efforts will be made to conserve and protect the grasslands of the western Rajasthan.

Grasses and their values have been recognized since time immemorial as the present day cereal crops are the cultivated varieties of their wild ancestors. Use of grasses, as food resources or as fodder has led

to extensive breeding programs and improvement in pasture land. Efforts for pasture management have been confined either to improvement of existing grasslands or introduction of suitable exotics. There is no sound management plan for the development of pasture land and protection of existing patches of grasslands, some of which are unique and harbour rich fauna. Even the value of these grasslands in terms of their biological diversity has not been fully documented.

Grasslands evolved under a system of grazing, drought and periodic fire and almost all the existing grasslands are maintained by either of these or a combination of all these factors. Tropical grasslands, which are in the mid succession stage, are largely maintained by annual or biannual burning in most of the protected areas, whereas in unprotected areas they are maintained by livestock grazing and other biotic factors. Maintenance of these mid succession grasslands, especially as a wildlife habitat to protect some of the key grassland species thus depends upon careful planning and management of these grasslands.

The Indian Council of Agricultural Research conducted grassland surveys and classified the grass cover of India into five major types:

1. ***Sehima-Dichanthium* Type**
2. ***Dichanthium-Cenchrus-Lasiurus* type**
3. ***Phragmites-Saccharum-Imperata* type**
4. ***Themeda-Arundinella* type**
5. **Temperate and alpine cover.**

Out of these five categories of grasslands only first ***(Sehima-Dichanthium* Type)** and second (***Dichanthium-Cenchrus-Lasiurus* type)** types of grasslands are found in Rajasthan.

Grassland Protection

Grasslands are neither managed by the Forest Department, the agriculture department nor by the veterinary department who are

concerned with livestock, but not the grass on which the livestock is dependent. The grasslands are the 'common' lands of the community and are the responsibility of none. They are the most productive ecosystems in the subcontinent, but they belong to all, are controlled by none.

All types of grassland ecosystems are under tremendous grazing pressures. In the semi-arid grasslands, the carrying capacity is 1 Adult Cattle Unit (ACU) per ha, but the stocking rates are as high as 51 ACU per ha, while in the arid areas, the carrying capacity is 0.2-05 ACU per ha but the stocking rates are 1 to 4ACU per ha.

Arid and Semi-arid grasslands

The dry desert occupies nearly 10% of India's geographical area, mainly in Rajasthan and Gujarat. One of the smallest deserts in the world, the Indian Thar desert has a high avian diversity.

Some of the Protected Areas (PAs) of arid and semi-arid grasslands have an important genetic resource in the form of grass and shrub species, which are important for ecological and food security of the country. Therefore, these PAs and other types of protected areas should not be considered as important only for wildlife conservation but should be considered as gene banks. For example, most of our cereals have originated from wild grasses. Arid and semi-arid areas also have important breeds of livestock that also need protection. Therefore, protection and enhancement of PAs in arid and semi-arid regions and also protection of wildlife outside PA system should be given high priority and should be integrated in the over-all land-use policy of the country.

Legal protection to grasslands

The grasslands are the most neglected and least protected ecosystems in India. They will remain unprotected unless they are notified as Protected Areas under the Wild Life (Protection) Act, 1972 or notified as Protected or Reserve Forest under the Rajasthan Forest Act, 1953. Most of the States

have excluded the grasslands and have not identified them as “deemed forest.” As per the landmark order dated 12.12.1996 in the Forest Matter (T. N. Godavarman Thriumalpad V. Union of India and others in W.P. (C) No. 202/95) word ‘forest’ should be given a wide and liberal interpretation and the grasslands should be notified as ‘forest’ and be given the protection under the Forest (Conservation) Act, 1980. In view of the fact that the grasslands have spontaneous natural vegetative growth, these should also be treated as ‘forest land’ for the purposes of the Forest Conservation Act and restrictions on diversion of such lands for non-forest use should be applicable to these critical ecosystems as well.

The central government should invoke the provisions of the Articles 251 and 254 of the Constitution and the state government should instruct the Revenue Department not to divert any grassland.

Such areas can be declared as ***community or conservation reserves***. Some areas can be identified as Ecologically Fragile Zones under Section-5 of the Environment Protection Act, 1986.

There should be some legal and social protection of these grasslands from invasion of nomadic graziers, especially during the growing period of the grasses.

Development of Grasslands in the State: As per Revenue record, the total area of the pasture lands in the state is 16978.49 sq. Km. The pasture lands will be developed by applying ***silvi-pasture model***. Under this category, existing pastures will be selected for improvement and enrichment. In the Phase-I of the scheme, only 5000 sq km of grasslands/pastures have been proposed for treatment at the cost of Rs 18.36 crores.

CHAPTER V

Protection of Plantations-

In the State most of the forest areas are degraded because of lack of adequate frontline staff and facilities available to them. At present 10 to 15 sq. km forest area is under the charge of a Forest Guard, besides the plantation sites. So, in the present circumstances, it is not possible to protect the additional plantation sites against illicit felling, encroachments, illegal mining, fires, poaching and grazing.

Keeping in mind the massive afforestation targets proposed in the vision document, it is not possible for the forest department alone to effectively protect the plantations sites. So, it is suggested that the plantation activities in non-forest areas be handed over to Panchayat Raj Institutions and NGOs, and should be managed and protected by them under MNREGA. The services of the retired forest officials may be hired to guide and assist the PRIs.

The ***Eco-Task Force*** may be engaged in Western Rajasthan for planting and protection activities.

Eco-Development Forces-

The idea of Ecological Task Forces (ETFs) was initiated by the Ministry of Defence in 1982 with a view to seeking involvement of ex-servicemen in afforestation and eco-development in remote and difficult areas to undertake restoration of degraded ecosystems through afforestation, soil conservation and water resources management techniques. The scheme also serves as a mechanism to rehabilitate the ex-servicemen for productive work and to create employment for retired army personnel mainly in rural areas. Initially it was decided to raise, at-least one battalion for each state to combat growing menace of large-scale deforestation, the spread of desert and for waste land development. But, because of financial and other constraints this could not be made effective. 127 Inf Bn (TA) Eco Garh Rifles

was raised in 1982 at Lansdowne-Garh Rif Regiment Centre, and then priority was given to “Thar Desert”.

128 Inf Bn (TA) Eco Raj Rif was raised on Ist September, 1983 at Raj Rif Regiment Centre, Delhi Cantt under the Command of Lt. Col. (Later Col.) K.Shardul Singh to put a check on the spread of desert.

At present there are 4 Eco Task Force Battalions raised with the Regular and Territorial Army Personnel. These are:-

S.No.	TA Bn Id No.	Year of Raising	Location
1	127 Inf. Bns	1981	Shivalik Hills
2	128 Inf. Bns.	1981	Rajasthan Canal (Bajju)
3	130 Inf. Bns.	1988	State of J&K
4	130 Inf. Bns.	1994	Pithoragarh (Uttarakhand)

The progress of the ETF Battalions is being reviewed jointly by Ministry of Defense and Ministry of Environment and Forests. 128 ETF Raj Rif was initially deployed in Amarpura (Bikaner district) from 1983 to 1996 and under took the afforestation work. Then the battalion was sent to left bank of Indira Gandhi Main Canal to participate in afforestation activities.

The unit has planted 7330 ha and has developed 3540 ha area as pastures in Bikaner district. The unit was shifted to Sri Mohangarh, District Jaisalmer on Ist May, 1997 to operate in that difficult and hostile area. Since arrival in Sri Mohangarh, the unit has planted 4331 ha of area and has developed 200 ha as pasture. The unit has also raised seedlings and plantations under Border Area Development Project (BADP) in 2008-09. 600 ha of land is allotted to the units for advance work and plantations in 2009-10. Thus, the unit owing to its military ethos, disciplined life and hard work, is providing yeoman service to preserve the Desert Eco-system.

Keeping in mind the dedicated service and disciplined life of the unit to preserve the Desert Eco-system, it is strongly recommended that one

more unit of the Eco Task Force be raised for checking desertification in the state especially the western part.

Financial Requirement –

It is not possible to calculate exact investment requirement for the next fifteen years, because of inflationary trends and increase in wage rates. However, for treating the 12.00 lac hectares of revenue lands and other community lands including EPAs in Phase-I, an amount of Rs**. 7256.74** crores would be required. The amount is subject to revision with the increase in wage rates and material cost from time to time. However, for treating the whole area required (35747 sq.km) to achieve the 20% target of tree-cover, an estimated amount to the tune of Rs 21620.42 crores would be required at the present minimum wage rate of Rs 100 per day.

The cost of one Battalion + 3 Coy (Officers 5,JCOs 8,Ors 267) for five years to raise 400 to 600 ha plantations would be Rs 16.44 crores. This amount is in addition to the amount required for afforestation activities.

Funding -

It is apparent that to treat 35,74,700 ha of non-forest land a huge amount to the tune of Rs 21620.42 crores would be required. At present there is no definite assurance of fund availability other than NREGAS. Since, planting activities are highly time bound programme, unavailability of labor in time would jeopardize the entire effort. Since, NREGS is a demand driven programme, during actual need of labour at the time of planting, sufficient number of labour do not turn because in rural areas at that time agricultural activities remain in peak. Hence, availability of labour has to be ensured to make planting programme a success.

Therefore, it is proposed that the total requirement of funds for treating the non-forest areas can be met from NREGS.

However, as per availability of funds from other sources, more area can be treated for which the Forest Department will make special efforts.