

CHAPTER 12

Rajasthan State Forest Policy-2010

1. Preamble :

- 1.1. The National Forest Policy, 1988 lays down the guiding principles for forest management in all the states of the country including Rajasthan. The peculiar geo-climatic conditions of Rajasthan with vast areas of the State being part of the “Thar Desert”, has not only made it a forest deficit state but also turned forestry to be a very challenging task. In-fact the conservation of forest and biodiversity of the State as well as meeting the livelihood needs of the forest dependent communities can not be addressed without a comprehensive State specific Forest Policy.
- 1.2. The National Forestry Commission has also recommended that each State shall have its own Forest Policy for the sustainable management of its forest and wildlife resources. It should also have a mechanism to monitor implementation of forest policy provisions and suggest rectifications.
- 1.3. Understanding that forest is a concurrent subject in our Constitution, the State Forest Policy has been drawn in the overall ambit and framework decided in the National Forest Policy by the Central Government.
- 1.4. The Government of Rajasthan, being aware of the important role played by the forest and the symbiotic relationship between people and the forest, accordingly adopts this State Forest Policy.

2. Key Features of Forestry Sector :

- 2.1. Rajasthan is the largest state of the country in geographical area with 10.4% of landmass of the country. The State is divided by one of the oldest mountain system in the world the Aravalli hill ranges stretching from Delhi to Gujarat, in the north east to south west

direction dividing the State into two unequal halves. Two third part of the State, in the western side of the Aravalli hills, is part of the Great Indian Desert known as the Thar Desert, 61% of which lies in Rajasthan. The eastern part of the State, being semi arid has relatively better climatic conditions. The Vindhayan intrusions, in the eastern and the south eastern part of the State, drained with rivers and streams are as significant to the ecology of the state, as the manmade canal system of Indira Gandhi Nahar Pariyojna in the Thar Desert. Forestry is a challenging task in different ecosystems where water is a limiting factor. The State has 5.5% of human population whereas livestock population is 11% of the country. The livestock depends on pasture land which accounts for only 1% of country's grazing land. Besides, the State has only 1% sweat water of the country making it a water deficit state.

- 2.2. Forest area of the State is only 9.56% of its total geographical area which is mainly confined to Aravallis and Vindhayan hill ranges of the state. The per capita forest area is only 0.06ha, which is one of the lowest in the country. These forests are either of Tropical Dry Deciduous nature in hilly terrains or of thorn Forests in the arid and semiarid parts of the State. Dry Deciduous forests consist of some gregarious species characterized as edaphic climax of the area interspersed with Mixed Miscellaneous type. Forests of the state meet the multiple demands of timber, small timber, firewood, fodder and other Non Timber Forest Produce for livelihood needs of local people living in and around forest areas. However, there is a very large gap between the actual demand and supply. Apart from these tangible goods, forests also provide a host of ecological services to the human society which are difficult to be quantified in monetary terms.
- 2.3. Forests of Rajasthan are also very rich in wildlife and contain a varied range of prey and predator animals. Some of the best managed National Parks and Sanctuaries are located in the State. Beside the unique Desert National Park sanctuary, the State has two world heritage wetlands, namely the Keoledev National Park, Bharatpur and Sambhar lake. In Desert belt of the State, large number of wildlife is generally sighted outside forest areas also. This rich biodiversity thus attracts large number of tourists to Protected Areas of the State and has become popular tourist destination with large number of historical forts, palaces and religious places with heritage buildings.

- 2.4. Forestry has proved to be lifeline for the people, particularly for the tribal who live in and around the forests. The harsh climatic and edaphic conditions stand in the way of expanding green cover of the State. Forestry map is co terminus with poverty map of the state as a result most of the bonafide domestic needs are met from forest areas. The State has embarked upon an ambitious programme of the people oriented Forestry primarily to meet the twin requirements of fuel and fodder to benefit tribal as well as economically disadvantaged group of people.
- 2.5. The State has rich tradition of nature conservation. Vishnois in western Rajasthan have amply demonstrated this spirit by religiously protecting the flora and fauna of the desert as a result of which, one can see Black Buck and a Chinkara (Indian gazelle) freely roaming in the back yards of the Vishnoi habitations. The massive afforestation is necessary not only for development, planning and management but also for reviving the conservation efforts by harnessing the rich indigenous knowledge of biodiversity conservation with appropriate cost effective technology packages through participatory approach.

3. Objectives :

- 3.1. The basic objectives of State Forest Policy of Rajasthan are as follows:-
- 3.1.1. Protecting, conserving and developing natural forests of Rajasthan with active participation of local community for ecological security of human society.
 - 3.1.2. Undertaking massive afforestation on Government, Community owned wasteland, privately owned agriculture and non farm land for expanding the vegetal cover of the State both in rural and urban areas simultaneously to meet the timber, fuel wood and non-timber produce demands of the society.
 - 3.1.3. Increasing the productivity of forests through appropriate management interventions and use of modern technology to meet the needs of present as well as future generations.
 - 3.1.4. Combating desertification (through Shelterbelt plantations, Block plantations, Sand dune stabilization and Agro-forestry in desert areas) and preventing all kinds of land degradation.

- 3.1.5. Meeting the livelihood needs of tribal and other forest dependent communities by reducing their dependence on Natural resources by development of proper facilities of processing, grading, value addition and marketing particularly of non timber forest produce.
- 3.1.6. Conserving floral and faunal diversity and gene pool reserve through a network of protected areas, such as National Parks, Sanctuaries, Conservation Reserves and Community Reserves.
- 3.1.7. Conserving rare and endangered species of flora and fauna of the state by undertaking in-situ and ex-situ conservation measures, apart from conserving and managing biodiversity-rich ecosystems such as grasslands, orans and wetlands etc.
- 3.1.8. Empowering the village communities for sustainable management of forest under Joint Forest Management system.
- 3.1.9. Strengthening forestry research base for enhancing productivity of forest and promoting better utilization of forest produce.
- 3.1.10. Disseminating and extension of research findings and proven technologies for adoption by the users and providing support services to the farmers for promotion of agro-forestry.
- 3.1.11. Instituting human resource development through a proper system of career planning, upgrading the technical and professional skills of forestry personnel, villagers and other important stake holders.
- 3.1.12. Shifting the focus from traditional management practices to people oriented approaches by internalizing intensive and extensive participatory strategies in the working system of the Forest Department to make it people's movement with the increasing involvement of women.
- 3.2. The principal aim of forest policy is environmental stability and ecological security through increasing vegetal cover which will lead to reduction in soil erosion and consequently dust particle in upper stratosphere. The reduction in stratospheric temperature is likely to

increase the possibility of rains. Increased sequestration of carbon from the atmosphere will reduce threats of global warming and climate change problems.

4. Principles of Forest Management :

The objectives of the State Forest Policy will be achieved by adopting following broad principles:-

- 4.1. Existing forests will be protected from all kinds of anthropogenic pressures and managed on sustainable basis through Working/Management Plans.
- 4.2. Participation of local community shall be central to forest management. Participatory approach will be adopted to integrate the concerns, aspirations and needs of the forest dependent communities and various other stake holders.
- 4.3. Protected Areas of good wildlife habitats will be declared by notification as National Park and Wildlife Sanctuaries on landscape basis for conservation of wildlife and bio-diversity with a people centric approach. Good forest habitats of smaller areas or wildlife populated common lands can be declared as Conservation or Community Reserve. Management of these areas can be done as per prescriptions of approved Management Plan.
- 4.4. Drought proofing through afforestation and pasture development shall be main focus of forestry in the State.
- 4.5. State Forest Department is the custodian of forest resources belonging to the people, but at the same time there is a general obligation to protect our forest ecosystem, threatened endangered species and biodiversity that are important for sustaining life and providing livelihood. Wherever, it is not possible to provide protection due to overriding public interest, the compensation must be demanded from proponent of the activity for the loss of goods and services.
- 4.6. Co-ordination with other Govt. departments and other institutions of the State in the best interest of forests will be followed by integrating environmental considerations in sectoral policy and action plan.
- 4.7. In order to translate the Policy into action, a transparent, responsive and accountable forest administration is needed with basic infrastructure to face challenges.

5. Strategy :

5.1. Area under Forest

The National Forest Policy envisages at least one third of the land area of the country to be under forests but the inhospitable climatic and edaphic conditions come in the way of the state to have more than 20% vegetal cover of the geographical area of the state. However, the State shall strive to develop forest cover in conformity with the National Forest Policy, 1988. Since the forestland is only 9.56% and vegetal cover of the state is 7.1%, hence wasteland under the ownership of the Government, Communities and Private persons are to be brought under vegetal cover with special efforts. It will also include pasture lands and lands with scattered tree and shrub as characteristics of desert flora. Looking to the vast tract of the State, the gap can be bridged by bringing additional 45,000 Sq. Km. of area under afforestation and pasture development in a reasonable time frame.

5.2. Treatment of Forest Areas

- 5.2.1. All notified forest areas in the State will be mutated and demarcated by erecting boundary pillars on the ground and boundary line digitized on the maps with proper geo-referencing. Records of Forest blocks will be superimposed on Revenue maps and will be kept in public domain with khasra details as per the latest Revenue Settlement.
- 5.2.2. All unnotified forest blocks shall be notified and settlement process be initiated as early as possible.
- 5.2.3. All forest areas, notified or unnotified will be brought under the ambit of Working Plan and managed accordingly.
- 5.2.4. Budgetary provision for forest department will be based as per the prescription of working plan of the division.
- 5.2.5. All dense forests will be managed as per silvicultural principles, primarily for ecological security and environmental stability besides ensuring supply of unpolluted water, air and conserve the bio-diversity.
- 5.2.6. There will be a ban on felling of green trees from the forests but the dead, dying and moribund trees can be removed as per silvicultural prescriptions. However, green trees standing in departmental nurseries may be removed as per need and disposed of.

- 5.2.7. Degraded forests of the state will be rehabilitated through assisted natural regeneration with planting and seed sowing of species. Soil and moisture conservation measures will be taken up extensively to facilitate natural regeneration and arresting soil erosion. Contour trenches can be taken up in gentle to moderate slopes, whereas contour dykes are to be taken in steeper slopes and V-ditches can be taken in gentler slopes. Pits can be dug on plain areas for planting.
- 5.2.8. Rehabilitation of degraded forests will be taken up with people's participation to give sustained income to members of village community by planting diversified species viz. Gwarpatha (*Aloe vera*), Ratanjot (*Jatropha curcus*), Guggal (*Commiphora wightii*) and other plants of medicinal values on ridges of contour trenches or V-ditches. Bamboo (*Dendrocalamus strictus*), Aonla (*Embllica officinalis*) Lasoda (*Cordia mixa*), Sitaphal (*Annona sqamosa*) etc can be planted so as to ensure economic returns from plantations in short time. However grass seeds sown with ploughing in the interspaces of trenches or pits, can be developed to reap in large quantity. The community members can be allowed to cut and carry grasses as head loads or cart loads.
- 5.2.9. Intensive Drainage Line Treatment (DLT) works will be taken up for in-situ conservation of soil and water ultimately. The excess run off can be harvested to recharge the ground water.
- 5.2.10. Proper Water harvesting technique will be adapted to retain moisture in the root zone of planted saplings for ensuring better survival of plants.
- 5.2.11. In natural forests, some flagship species will be identified as ecological indicators for sound management.

5.3. Forest Protection and Conservation

- 5.3.1. Eleven Districts of Rajasthan namely Alwar, Banswara, Baran, Bundi, Chittorgarh, Dholpur, Jhalawar, Karauli, Kota, Sirohi and Udaipur have more than twenty per cent forest area of their geographical area. Conservation and Protection of these forests shall be primary focus and it needs to be strengthened by mobilization of man and material resources.
- 5.3.2. Twelve districts namely Ajmer, Bharatpur, Bhilwara, Dausa, Dungarpur, Ganganagar, Jaipur, Jhunjhunu, Pali, Rajsamand, Sikar and Sawaimadhopur are having five to twenty per cent forest area.

Apart from increasing forest area in these districts, eco-restoration and afforestation is required in an increasing manner on wastelands under Government, community and private ownership so as to cover the gap between existing vegetal cover and required vegetal cover.

- 5.3.3. The remaining nine districts namely Barmer, Bikaner, Churu, Hanumangarh, Jaisalmer, Jalore, Jodhpur, Nagaur and Tonk, have less than five per cent forest area and hence vegetal cover will be enhanced appreciably in these Districts. Therefore, wherever required, Combating desertification programme will be taken up in these districts on priority.
- 5.3.4. Mining in the forest areas shall be discouraged by all means. Mining operations cause innumerable damages to the forests. Thus, a judicious decision is required before permitting mining in these areas. The illegal mining in Rajasthan needs to be controlled by beefing up surveillance in forest areas through joint inspection of Mining, Forest and Police officials. The intelligence system can be developed to curb the illegal mining and informers of illegal mining activity in the forests would be suitably rewarded without disclosing their identity. The mining associations of sand stone quarries must be motivated to take up compensatory plantation on degraded forest land set apart for them. Reclamation of the mined areas at the cost of miner should be enforced by Mining department.
- 5.3.5. Encroachment is a perennial problem in forest areas. The slums have come up on vacant forest land near the city areas. Eviction process of these slums shall be taken up on priority with the help of urban development agencies. Forest areas vulnerable to encroachment are to be fortified by erecting pucca walls to check further ingress into the forest areas. The removal of encroachment in vulnerable remote areas needs to be handled both by persuasive and coercive means. Generally encroachment in the remote forest areas takes place on the onset of monsoon. Therefore, patrolling and effective watch and ward system shall be strengthened so as to prevent and minimize this problem.
- 5.3.6. During summer, occurrence of forest fire is very common in Rajasthan. The past experience shows that the ground fire often occurs by burning of grasses and shrubs. In order to curb the forest fire, the fire lines need to be created and maintained in forest areas at regular intervals. Subordinate staff will be given modern gadgets for controlling and extinguishing forest fire. The members of the Joint

Forest Management Committee and the local people on demand will be duty bound to help in extinguishing the forest fire.

- 5.3.7. During monsoon, illegal grazing in forest areas causes tremendous soil loss, turns good forest into barren rocky areas and makes it unsuitable for natural regeneration. During this time, not only juvenile plants are grazed and browsed but seedlings also get trampled. Apart from local cattle, migratory sheep also cause a huge damage to forest during monsoon. Therefore, enhancement of grazing fees, breed improvement of cattle, regulated grazing, promoting stall feeding by permitting cut and carry of grasses at nominal costs and development of improved pastures besides JFM can help in curbing this menace in our natural forests.
- 5.3.8. Illegal felling of trees in natural forests and transportation of these produce is resorted to by local populace but it acquires serious dimensions during drought period. Rajasthan is fuel wood deficit state so the practice of illegal transportation needs to be curtailed by erecting check posts and barriers on interstate boundaries.
- 5.3.9. Poaching of wild animals from natural forests and outside Protected areas is practised for illegal trading of wildlife products both in domestic as well as international market. Adequate infrastructural support to curb poaching is lacking. Intensification of patrolling, surveillance and developing crime intelligence are essential to reduce the threat of poaching.
- 5.3.10. Interdepartmental co-ordination with Revenue, Police, Mines, Animal Husbandry, Transport, Research Institutes and laboratories is need of the hour to reduce forest offences.
- 5.3.11. In spite of manifold increase in anthropogenic pressure over the years, protection staff in the Forest Department is grossly inadequate as staff norm has hardly been revised. Since there is no regular recruitment at grassroots level staff for over two decades. The beat guards are forced to look after 10 to 15 Sq Km area as against the ideal norm of 5 to 7 Sq Km. Area. Not only one third posts are lying vacant but at the same time protection of forest has also become critical with ageing staff. Staff is also not equipped with modern gadgets to counter forest offenders who are better equipped with fast moving vehicles, arms and ammunitions, modern tools of committing offence besides being far more organized which eventually affects morale of the staff in absence of a proper mechanism of rewards and

incentives as is in vogue in Police Department. The status of Flying Squads is also far from satisfactory for want of vehicles and enough budget for running and maintenance of motor vehicles. Increase in protection staff and strengthening of infrastructural support is a dire need for better protection of Forests and Wildlife.

- 5.3.12. Though damage of forest due to pest and diseases is rarely seen in forest areas of the state, it can be controlled by taking collaborative support from research institutions, as and when needed.

5.4. Afforestation on Government land, Community land and Private land

- 5.4.1. In order to expand the vegetal cover, afforestation and pasture development activities will be taken up on massive scale with active participatory approach of local people.
- 5.4.2. The Revenue wasteland, wherever available in different districts will be identified for taking up plantations with appropriate multipurpose tree species such as Neem (*Azadirachta indica*), Shisham (*Dalbergia sissoo*), Siras (*Albizia lebbek*), Awonla (*Embllica officinalis*), Karanj (*Pongamia pinnata*), Churel (*Holoptelea integrifolia*), Bar (*Ficus bengalensis*) and Pipal (*Ficus religiosa*).
- 5.4.3. The multipurpose tree species selected for plantation on these lands should be less water demanding and drought resistant. Use of biofertilizers, Quality Plant Material and better soil preparation will enhance the productivity of these wastelands.
- 5.4.4. Vacant institutional land under the possession of various government departments needs to be taken up for planting with the active cooperation of concerned departments. Wherever, land is available in educational institutions, this can also be planted up with active involvement of the Students, Teachers and spirited Social workers.
- 5.4.5. Available linear patches along various types of roads can be planted with single / multiple rows as per the availability of space with shady/ornamental tree species. Roadside plantation can be kept as an integral part of any new road construction project and concerned agency of construction and maintenance will be fully responsible to maintain these trees along with the maintenance of these roads. However, old roads, where further expansion is not proposed in near future, Roadside Plantations can be undertaken with the help of Forest Department, committed NGOs, and local self Government bodies at the earliest. The possibility may be explored to associate Non Resident Rajasthanis for undertaking roadside plantation.

- 5.4.6. Urban Development Authorities will be responsible to plant trees along the road side in urban areas. Further, the Urban Development Authorities and Housing Boards are expected to set apart some part of the land proposed to be developed as a housing colony for tree plantation as per their policy. Inner roads and lanes in such colonies should be planted with suitable shady and ornamental tree species.
- 5.4.7. Canal side plantations will be the responsibility of Irrigation Department and can be taken up as an integral part of canal construction and maintenance work.
- 5.4.8. Vacant land available along railway tracks can be planted up with suitable tree species as per the norms of railways by the concerned railway engineering division and be maintained along with the maintenance of railway track.
- 5.4.9. There are 9168 Panchayats in the State and each Panchayat has its own gauchar (grazing land) of various dimensions. These patches of land will be taken up for planting under silvipastoral model with active participation of community. The management of such plantations can be entrusted to the institution as per provision of The Rajasthan Panchayati Raj Act 1994. Wherever the Panchayats with unanimous resolution of the Gram Sabha, feel it necessary, the land available with them may be given to Forest Department for Development of plantations for a fixed period. Thereafter, such land may be transferred back to the concerned Panchayat for further maintenance and management till harvesting as per approved management plan. Panchayat land plantations, if developed with the funding of the State Government, the net revenue receipts on sale after final felling shall be shared between the Panchayat and Government as per the decision of the Government.
- 5.4.10. Private individuals will be motivated to plant tree species of their choice in vacant spaces of their backyard / front yard of their dwelling units. The required plants of their choice will be made available through the existing network of nurseries of forest department.
- 5.4.11. Large chunk of marginal waste lands are available in private ownership which can be put to productive use by planting suitable trees of economic importance. Such plants/saplings can be obtained from the nearest forest nursery on nominal costs. The technical know how for such plantations will be provided on demand by the Forest personnel / Agriculture Extension Officers located in the vicinity.

Individual farmers will be encouraged to undertake agro-forestry plantations on their farm lands.

- 5.4.12. Other vacant lands in cities / villages under community possession can be developed as commemoration plantation / Tree Park where people will be encouraged to plant sapling and maintain them.
- 5.4.13. Rajasthan is water deficit state and therefore supplemental irrigation is essential for better survival of plants. All planting sites will have to develop appropriate rain water harvesting structures to store adequate water for use in these plantations. Similarly proper safeguards will be put in place to protect these plantations from biotic interferences.

5.5. Demand and Supply of Forest Produce

Forestry Sector alone can not meet various needs of forest produce as a sizeable gap exists in all major wood products like timber, small timber, fuel wood, bamboo and Non Timber Forest Produce (NTFP) like grass and fodder, tree borne oil seeds, gums, oleoresins, wild flowers, wild fruits, tendu leaves, and medicinal plants etc. This problem can be addressed through a two pronged strategy like reducing the demand and increasing the supply by maximizing benefits to the local communities in following manners :

- 5.5.1. Forest areas alone can not provide all the needs of the wood produce. Hence, large scale irrigated plantations need to be raised along IGNP areas outside the forest on Gross Command Areas (GCA) leaving Cultivable Command Areas (CCA) to cater to ever increasing demand.
- 5.5.2. Even in present condition, a large part of timber, small timber and fuel wood demand is met from harvesting of mature trees standing on farmland. Enabling provisions will be made to increase the area under Agro Forestry for increasing availability of forest produce.
- 5.5.3. *Prosopis juliflora* has extensively spread on all kinds of wastelands and a growing tendency is seen among people to cut and convert in to charcoal for sale outside the State to earn profits. The growth of *Prosopis juliflora* which used to meet demand of fuel wood has helped in reducing the illicit felling of trees in natural forest. The possibility of adverse effect on natural forests due to its commercial exploitation needs careful review of the provisions of the policy directions from time to time. Similarly, woody roots of *Phog* (*Calligonum polygonoides*), an excellent soil binder occurring

extensively in Thar desert area, are mercilessly cleared by farmers for supplying fuel wood to neighbouring states. This practice needs to be discouraged or else it will destabilize desert and accelerate desertification process.

- 5.5.4. In order to reduce demand, fuel efficient stoves and smokeless Chullahs need to be popularized with proper extension mechanism. Solar Cookers need to be promoted besides promotion of Pressure Cookers in rural areas of Rajasthan. Cooking Gas cylinders can be provided at subsidized rate around National parks and sanctuaries to put a check on illicit felling of trees.
- 5.5.5. Extensive Silvi-Pastoral Plantations with community participation, development of irrigated pastures along IGNP areas, Resuscitation of Grass Birds under control of Forest Department will enhance grass and fodder production, encouraging local people to create Fodder Banks and providing incentive to farmers for raising green fodder.
- 5.5.6. Farmers treat bamboo as poor man's timber. Special efforts need to be undertaken for promoting bamboo cultivation as an important agro forestry crop under the National Bamboo Mission.
- 5.5.7. In the past, large scale depletion has been noticed in Salar (*Boswellia serratta*), Dhak (*Butea monosperma*), Karaya (*Stercularia urens*), Dhawra (*Anogeissus latifolia*), Guggal (*Commiphora wightii*) etc in forest areas. Most of these tree species of natural forests exude gum and oleoresins. Overtapping of gums by creating injury with blaze has resulted into mortality of these species and many of them are threatened to extinction. Moratorium on gum tapping can be clamped from time to time after periodic review.
- 5.5.8. For increasing production of Tendu leaf, cultural operations in forests are to be practised, as this industry alone provides large scale employment opportunities to tribal pluckers in lean seasons as well as to a large number of people engaged in its processing, transportation and *biri* making as cottage industry.
- 5.5.9. Large number of people in forest fringe villages are dependent on extraction, collection, processing, value addition and trading of array of Non Timber Forest Produce (NTFP). But due to ignorance in handling of these products on competitive basis, number of the tribal people simply barter these valuable products for domestic goods to meet their immediate demands. There is no organized market for Non Timber Forest Produce (NTFP). Consequently the tribals get cheated

owing to lack of bargaining ability. The evolution of a proper marketing mechanism needs to be developed for providing forward linkages to make these Non Timber Forest Produce (NTFP) as livelihood means.

- 5.5.10. Large numbers of medicinal plants are available in forests are currently being used in local health traditions for curing of many diseases. This indigenous knowledge of the community needs its documentation. If its efficacy is established through research, the same needs to be patented in favor of the community. The wild gene pool of medicinal plants needs to be conserved by establishing Medicinal Plant Conservation Areas (MPCA). For commercial extraction, agronomic practices will be developed for adoption by enterprising farmers. In natural forests and plantations, medicinal plants need to be planted wherever silviculturally feasible. Collection, processing and value addition can be done by local people by imparting skill to them. A chain of herbal garden is to be raised in various eco climatic conditions to sensitize people about these plants and to explore their therapeutic values. Facilitation in marketing of these products with proper networking with herbal industries will benefit local communities in the long run. Efforts shall be made to collect database for actual demand and supply of each of these medicinal plants to chalk out proper strategy for their conservation and development.

5.6. Enhancement of Productivity

The existing average growing stock of the state forests is around 10 Cu M per ha as against 74 Cu M per ha of the country. There is enormous potential to enhance the growing stock by providing technical and proper material inputs as well as by using site specific technologies coupled with intensive management practices.

- 5.6.1. Tree Improvement shall be given top most priority by selection of isolated candidate plus trees with superior phenotypic behaviour and Seed Stands from plantations or natural forests by selected removal of inferior phenotypic trees. It should be ensured to collect seeds, vegetative cuttings and propagules for macro or micro propagation in the state in future.
- 5.6.2. Seedling Seed Orchards or Clonal Seed Orchards shall be set up in different regions as far as possible. State Silvicultural Wing shall ensure to provide certified seeds of various species. Genotypically

superior trees will be identified after multi-locational provenance trials followed by progeny trials.

- 5.6.3. Modern hi tech nurseries with temperature and humidity controlled Mist Chambers and Net Houses will be used to produce planting stock by using root trainers and manipulated medium.
- 5.6.4. Quality Planting Material (QPM) shall only be used in raising plantations everywhere irrespective of initial cost increase. Bio fertilizer like *Rhizobium* and *Mycorrhiza* shall be used for boosting up the growth.
- 5.6.5. *In-situ* soil moisture conservation practices shall be used extensively for increasing soil moisture. In pit digging, wherever possible mechanical Auger with tractor can be used for getting worked up soil up to 5 feet depth for root development. For better productivity, intensive soil working involving land leveling, site clearing etc should not be compromised for minimizing costs.
- 5.6.6. Subsidiary Silvicultural Operations like pruning, singling and tending will be taken up besides protecting seedlings from l oo, frost and drought besides protection from stray domestic and wild animals, termites and other fungal and insect pests during juvenile stage of plants.

5.7. Checking Land Degradation

- 5.7.1. The catchments of river systems in the state will be managed on integrated watershed approach for increasing sustainable water supply in downstream areas by appropriate interventions including forestry activities.
- 5.7.2. Treatment of catchments of major, medium and minor irrigation dams for reducing silt loads and enhancing life of these costly projects is the prime responsibility of Irrigation Department and shall be integral part of the project cost in future. Forest Department can take up treatment of catchments areas, if funds are provided from the maintenance costs of these dams. However, the forest department will undertake the watershed development activities in and around the forest areas.
- 5.7.3. Reclamation of ravines in northern and eastern part of the state is a major challenge. These ravines will be treated with appropriate technology by adopting planting of local resilient species and

intensive soil-moisture conservation structures in the forest areas with the active participation of people.

- 5.7.4. There is large chunk of problem land in the state which is saline and alkaline. This land can be developed by planting local tolerant species and using soil improvement techniques such as chemical and physical treatment.
- 5.7.5. Water logged areas along Indira Gandhi Canal, Mahi and Chambal canals can be reclaimed by adopting proper soil working technique with tolerant species like Arjun (Termentalia arjuna), Jamun (Syzygium cumini) and Safeda (Eucalyptus spp) besides providing appropriate drainage of excess water.
- 5.7.6. Reclamation of mined areas is primary responsibility of miners on the principle of polluter will pay. Due to deep mining, not only the dug up areas are devoid of top soil but the overburden is dumped over extensive area with rocky boulders and inert soils. These areas can not be restored to green cover without providing nutrient rich soils for planting. Reclamation of mines should be an in-built condition for lease holders while granting of lease in future so that lessee may set apart some area in the beginning itself for stacking top soil in planned manner.

5.8. Combating desertification

Two third of the state of Rajasthan is under Thar desert spread over 12 districts in western part of the Aravalli hills with very inhospitable climatic conditions like low and skewed rainfall, wide fluctuation of diurnal and seasonal temperatures, high wind velocity and low humidity etc. coupled with adverse edaphic conditions. There is sparse vegetation all along the desert tract. However, due to uncertainty in agriculture, the people of the desert are highly dependent on livestock rearing with pastoral economy. Firewood and fodder are twin necessities of the people living in this area. The following measures will be undertaken for combating desertification.

- 5.8.1. Shelter belt plantation can be raised with tree species in the perpendicular direction of the prevailing wind velocity. Since, the crop production increases in the leeward side of the shelterbelt up to 20 times of the top height of the tree species in the shelterbelt; these shelterbelts should be raised in repetitive manner to increase agricultural production in the fields. The design of the shelterbelt can be taken in a pyramidal fashion with the tallest tree raised in the center. People will be encouraged to undertake shelterbelt plantations in continuous manner without a break or else gushing

winds through the breaks will have tunneling effect for further destruction. These shelterbelt plantations apart from checking the desertification and increasing crop productivity can supply fuel wood and fodder to the local farmers.

- 5.8.2. Block plantations can be raised in silvipastoral model on all vacant lands irrespective of their ownership for arresting the desertification process and meeting the needs of the local people besides ameliorating the local harsh climate.
- 5.8.3. 58 per cent of the desert tract of Rajasthan is under sand dunes. Some of these dunes are stabilized and semi-stabilized, whereas considerable number of sand dunes are in an active form threatening roads, canals, railway tracks, agricultural fields and habitations. However, 5 per cent of these sand dunes are either in government or community ownership whereas nearly 95 per cent are under private ownership. The people of the area should be encouraged to treat the dunes in their agricultural fields by adopting suitable technology under silvipastoral/ horti-pastoral models. Sand dune stabilization particularly the active dunes are of paramount importance and need to be immediately addressed through massive afforestation by adopting the suitable technology.
- 5.8.4. Plantations in the desert areas should be taken up with indigenous xerophytic species like Khejri, Kumtha, Rhonj, Rohida and Ber etc. Exotic species can be used in lesser quantity depending upon the locality factors. Adequate rainwater harvesting structures like tanka in all the plantation areas would be constructed to store rain water for irrigation of the planted species.

5.9. Wild life and biodiversity conservation

Rajasthan has two biogeographic zones viz Indian Desert zone and Semi arid zone distinctly divided by Aravalli hill region having rich biodiversity of flora and fauna. There are 2500 species of plants, 450 species of birds, 50 species of mammals, 20 species of reptiles and 14 species of amphibians besides numerous species of insects, butterflies, micro flora and fauna. Currently there are two National Parks, 25 Wildlife Sanctuaries and 2 Conservation Reserves in the State covering almost all diverse ecosystems of the State and all species of flora and fauna which are part of these bio-diversity rich ecosystems. Outside these Protected Areas, some bio-diversity rich forest areas are set apart as Medicinal Plant Conservation Areas (MPCA). Orans and Gauchars, outside forest areas are also repositories of bio-diversity. For

protection, development and conservation of these areas, following strategies can be adopted.

- 5.9.1. For the conservation of biodiversity, a minimum of 5% geographical area of the state should be set apart and declared as protected/conservation areas.
- 5.9.2. Inventory of biodiversity of each of these areas will be prepared meticulously with particular emphasis on critically endangered, endangered, threatened and rare species as per IUCN (International Union on Conservation of Nature) criteria. Such flora and fauna will be recommended for inclusion in the Schedule VI of Wildlife (Protection) Act 1972.
- 5.9.3. Both ex-situ and in-situ conservation will be planned. As an in-situ conservation measure, under provision of the Wildlife (Protection) Act, a chain of National Parks and Wildlife Sanctuaries wherever possible need to be interconnected by suitable corridors for transmission of genes.
- 5.9.4. Boundaries of Protected Areas will be rationalized to minimize conflicts with people living in the proximity.
- 5.9.5. Further fragmentation of existing habitat will be discouraged.
- 5.9.6. Each Protected area will be managed scientifically as per Management Plan highlighting Habitat Improvement, Control Measures, Tourism restrictions and Food chain etc. which can be monitored and modified with the approval of the competent authority as and when needed.
- 5.9.7. Eco-development Committees (EDC) will be constituted for the protection and conservation of Protected Areas. EDCs will be responsible to develop adjoining non-forest land for meeting the demand of fodder and fuel needs to reduce dependence on protected Areas. Skill development will be undertaken among neighboring community members to enhance their income generation through alternate livelihood means.
- 5.9.8. Identification of wetlands outside forest will be undertaken. Efforts will be made to develop them and protect the migratory birds from poaching.
- 5.9.9. The veterinary services in the department will be strengthened to tackle contagious diseases and to cater to other immediate health needs of wildlife.

- 5.9.10. Long-term and short-term measures will be undertaken for mitigating man-animal conflict. As there are many villages located within critical wildlife habitat, efforts need to be made to relocate these villagers voluntarily by properly compensating them.
- 5.9.11. Protocols for the rescue and rehabilitation of animals straying outside forest areas will be developed.
- 5.9.12. A regular system of monitoring of habitat and species will be developed.
- 5.9.13. Every National Park and Sanctuary will have an eco-sensitive zones delineated under the Environment (Protection) Act 1986 for minimizing negative impact of polluting industries on natural habitats.
- 5.9.14. Effective vaccination of the domestic animals around the Protected Areas will be undertaken with the help of Animal Husbandry Department to check spread of various animal diseases from domesticated animals to wild animals.
- 5.9.15. Breed improvement of the domestic cattle around Protected Areas may be undertaken to reduce grazing pressure on forests.
- 5.9.16. The Protected Areas of south Rajasthan are rich in floral diversity but these areas have inadequate prey base to support carnivore population. Efforts will be made to increase ungulate population and wild boars by captive breeding in the enclosures and releasing them in the wild.
- 5.9.17. Degraded Tiger habitats such as Ramgarh (Bundi), Bhainsrorgarh (Chittorgarh), Darrha (Kota) and Jamua Ramgarh (Jaipur) will be improved by effective protection and habitat improvement including enhancement of depleted prey base. Sloth bear population in South Western part of the Aravallis needs to be protected by declaring the area as a Sanctuary especially Jaswantpura Hills in Jalore District.
- 5.9.18. Special efforts will be made for grassland development in Desert National Park Sanctuary (DNP) to increase the population of Great Indian Bustard and other pastoral fauna.
- 5.9.19. In order to tackle wild life related crimes, a State Wild life Crime Bureau will be established for intelligence gathering and speedy investigation of the wild life related crime.
- 5.9.20. Lack of Education and awareness has been the weakest link in the

chain of biodiversity conservation. A massive programme of nature interpretation, education and extension is to be launched with the help of specially trained personnel and NGOs. Each Protected Area shall have one Interpretation and Education centre with adequate extension facilities. Special focus needs to be given to school children in this awareness generation effort.

5.10. Orans / Dev Van

- 5.10.1. Orans / Dev vans are islands of good forests and repositories of rich biodiversity. These orans / dev vans are an excellent example of religious faith in conservation. Efforts will be made to provide necessary financial and legal support in consonance with local religious ethos of the local community.
- 5.10.2. District wise inventory and database will be prepared for all such areas with the support of local NGOs and religious trusts. However, these areas will be demarcated on the ground as well as on cadastral maps on priority.
- 5.10.3. For management of these orans / dev vans, a committee of local people and trustees of the temple can be constituted to protect these areas.

5.11. Pasture Development

The people of the state are largely dependent on pastures and grazingland as animal husbandry practices and dairying is one of their major sources of livelihood. For development and management of the pastureland, emphasis will be given on the following:-

- 5.11.1. The traditional grass-birs under the control of the department will be improved by removing alien invasive species through mechanized means and then developed with sowing of perennial local grass species. Top feed tree species will also be planted at regular intervals so that during drought, when the grasses are not available, leaf fodder can be used as animal feed.
- 5.11.2. Grazing large number of cattle in grass birs beyond its carrying capacity results into deterioration of pasture land on accounts of trampling and soil compaction. Hence grazing in pasture will be discouraged and people will be encouraged to collect grass for stall feeding. Besides this, grazing fee will be rationalized to replace small ruminants by more productive bovine population.

- 5.11.3. The traditional gauchars (grasslands) of community ownership will be developed by involving local Panchayats.
- 5.11.4. Efforts will be made to improve and develop pastures on private lands especially in Western Rajasthan.
- 5.11.5. Agri-silvipastoral practices will be promoted to augment the availability of green fodder in the state.
- 5.11.6. Fodder banks will be established by encouraging the local people to collect and store grass in modern silos during good rainfall year from government grass birs to augment the availability of dry fodder during famine and drought.
- 5.11.7. Management of Grass-birs will be entrusted to local people through Joint Forest Management.
- 5.11.8. Large number of sheep from Western Rajasthan migrates during rainy season to good forest belts of Eastern and Southern Rajasthan causing damage and destruction to the forest apart from causing serious law and order problems en-route. Some of the migrating herds enter even neighboring states like Madhya Pradesh, Maharashtra, Uttar Pradesh and Gujarat causing inter-state disputes. Few herds of sheep of Western Rajasthan perennially camp in eastern Rajasthan. These nomadic sheep graziers need to be settled by developing pastures in the Indira Gandhi Nahar Pariyojna areas.

5.12. People's Participation

Participatory approach will be central to forest management in forest as well as non-forest areas. Following strategies will be adopted to make it more effective :

- 5.12.1. The Forestry development works in forest or non forest areas will be undertaken as far as possible through Joint Forest Management (JFM) Committees.
- 5.12.2. The State Government shall bring out resolution on Joint Forest Management from time to time based on its evolution and experience gained in consultation with the stakeholders. The Department will bring out working guidelines to facilitate uniformity of practices in subordinate offices. Possibility of framing rules under provision of Rajasthan Forest Act will also be explored.
- 5.12.3. Joint Forest Management Committees constituted so far can be classified as active, moderately active and less active on the basis of

certain predetermined criteria through periodic monitoring. Committees which are moderately active or less active will be strengthened for their up-gradation.

- 5.12.4. Alternate livelihood options of forest dependent communities will be given prime importance through Self-help Groups. Skill development of these groups will be done through constant efforts of capacity building and also to encourage them to start micro enterprises for income generation by providing them seed money.
- 5.12.5. Joint Forest Management Committees are to be encouraged to develop their corpus fund enabling them to maintain physical assets created in their areas including plantations.
- 5.12.6. The Forest Department will endeavor to empower women members and disadvantaged groups of the committees for their active involvement in decision making process.
- 5.12.7. Members of the committee will be specially trained in maintenance of accounts, conflict resolution and silvicultural operations.
- 5.12.8. The technical, social, economic, managerial and institutional support will be given to ensure sustainability of Joint Forest Management.
- 5.12.9. Public Private Partnership in forest areas will be encouraged within the framework approved by GOI through tri-partite agreement between the industry, forest department and JFM committees for undertaking plantations with specific purposes.
- 5.12.10. Three tier monitoring at Division level, District level and the State level will strengthen Joint Forest Management in the state. The NGOs may act as catalyst for Joint Forest Programme.

5.13. Research

The State will promote forestry and allied research to be responsive to the requirements of the stakeholders for quality, productivity and cost effectiveness in the implementation of the Forest Policy:

- 5.13.1. Identification of problems for research and their prioritization through periodic dialogue among all stakeholders like managers, NGOs, industries and even villagers before getting them approved by Research Advisory Groups comprising of forest officials, scientists from Research Organizations and representatives of Stakeholders.
- 5.13.2. Applied and adaptive nature of Research will be given priority by the department. The technologies and management practices developed

by other national and international research organizations relevant to Rajasthan will be tested and adopted.

- 5.13.3. The department will make use of the expertise available in various research institutions and departments to undertake forestry research projects. Collaborative research shall be encouraged with reputed forestry research institutions.

5.14. Extension and Communication

Forest department is engaged in the onerous task of managing natural resources against all adversities. It is necessary that the public and the decision-makers are informed of the initiatives, challenges and achievements of the department. The following steps will be taken in this regard:-

- 5.14.1. Suitable mechanism will be developed to disseminate information related to departmental activities and programmes to all sections of societies.
- 5.14.2. Publicity and Extension wing of the Department will be suitably strengthened with modern means of communications for effective services.
- 5.14.3. The Agriculture Extension Officers can be properly trained to educate and inform villagers about trees and forests, agro forestry, economic benefits of tree crop etc. as there is no extension cadre in the Forest Department.
- 5.14.4. The department will also post maximum possible information on the web-site of the department to keep public informed of the activities and achievements of the department.
- 5.14.5. Press and Electronic Media can be sensitized about forests, wildlife and other biodiversity conservation initiatives taken by the communities for disseminating the success stories to citizens by conducting periodic Media Visits in different parts of the State.

5.15. Human Resource Development

Due to paradigm shift in Forest Management from regulatory to anthropocentric approach, a fundamental change in the 'mindset' is required at all levels of personnel, who are custodians of this natural resource. Besides, the personnel shall have to keep them abreast with ever expanding frontiers of knowledge for updating their professional competence. Keeping these objectives in view, following strategy will be adopted:

- 5.15.1. The professional skills of the forest personnel will be improved by

imparting periodic in-service training. They will be deputed to Institution of repute within and outside the country for specialized training.

- 5.15.2. Induction training shall be mandatory for all levels of newly recruited field staff for inculcating professional skills.
- 5.15.3. The department will undertake exercise on Training Need Analysis for different cadres of forestry personnel as well as villagers, NGOs and other stakeholders. This will be followed by designing a suitable curriculum to impart training and improving it through regular monitoring.
- 5.15.4. Existing forestry training institutions in the state will be modernized and strengthened. The training curriculum will be restructured to meet the changing needs.
- 5.15.5. A system of incentives and rewards will be put in place to motivate the staff for improved performance.

5.16. Forest Administration and Staff Welfare

The protection, development and management of forests depend on effective administration. The lack of trained man power in the department has been a matter of concern for quite some time. Thus, delegation of power to the level of Assistant Conservator of Forest and Range Officer is imperative for the effective and quick disposal of matters pertaining to execution of works and other related matters. Emphasis will be given to the following for effective forest administration:

- 5.16.1. Vacant posts at all the levels will be filled up from time to time.
- 5.16.2. Regular recruitment of staff will be undertaken to overcome the shortage of manpower in the department.
- 5.16.3. A system will be put in place for the field functionaries and ministerial staff to give at least three promotions in their entire career.
- 5.16.4. A system of incentives and rewards will be introduced to motivate staff in checking forest offences.
- 5.16.5. Generally grass root level frontline staff lives in remote areas where proper educational infrastructures and medical facilities are not available. The housing facilities may be provided to keep their families at District Headquarter.
- 5.16.6. Efforts will be made to workout a transparent policy for transfer/posting of the staff in the Department.

- 5.16.7. Staff welfare fund can be created in Forest Department to provide immediate relief to staff at the event of death of sustaining physical disability while on duty.
- 5.16.8. A Forest Management Information System (FMIS) will be developed and institutionalized in the Department for flow of information.

5.17. Modernization

Modernization and change of technologies is quintessential for sound and effective management systems of an organization. Modernization in the following areas will be undertaken by the department:

- 5.17.1. Means of effective communication system will be provided to the field functionaries for immediate transmission of information to all concerned regarding forest offences, developmental works and other important matters.
- 5.17.2. Office automation will be given priority. Computers with internet facilities, printer, etc. will be provided up to the level of Range headquarters.
- 5.17.3. Provisions will be made to provide vehicles up to the level of Range forest officer for effective surveillance and protection of forest and wildlife.
- 5.17.4. Modern survey equipments will be provided at all levels like Global Positioning System, total Station, EDM, PDA, Digitizers, Scanners, Data Recorders and other required scientific equipments.
- 5.17.5. The offices at the headquarters will be provided with all essential modern technologies for effective monitoring and dissemination of information to the State and Central Government.

5.18. Financial Provisions

The forestry sector of the State faces perennial resource crunch due to inadequate budgetary support. In order to attract investments in forestry, following steps needs to be taken.

- 5.18.1. The sectoral allocation in the annual plan budget of the State Government would be enhanced for effective forest protection, development and management.
- 5.18.2. Efforts will be made to obtain soft loans from Overseas Development Assistance for implementing various forestry and wild life projects from bilateral/multi-lateral donor agencies.

- 5.18.3. Efforts will be made to draw more central assistance under centrally sponsored schemes for the implementation of specific forestry, soil conservation and wildlife projects from the Ministry of Environment and Forests, Ministry of Rural Development, Ministry of Agriculture, Ministry of Tourism, Ministry of Non Conventional Energy Sources, Ministry of Biotechnology etc.
- 5.18.4. Institutional financing can be availed from NABARD, NOVOD etc to implement projects in RIDF and allied schemes.
- 5.18.5. NREGA funds will be increasingly utilized for eco-restoration of degraded forest and for the land development with soil and moisture conservation structures in forest and wild life areas.
- 5.18.6. State CAMPA Funds will enable the Department to take up innovative projects in forestry and wildlife out of the money realized from Net Present Value under Forest Conservation Act 1980.
- 5.18.7. Special funds may be sought from Finance Commission for conservation and protection of forests and wildlife.
- 5.18.8. Corporate investment can be invited within the framework of guidelines to develop plantations through Joint Forest Management committees. Funding welfare projects for alternate livelihood promotions in forest fringe villages can be sponsored also by Corporate Sector under the obligation of Corporate Social Responsibility (CSR).
- 5.18.9. Donations can be raised from Wildlife tourists, Trusts and Private individuals by forming Societies/ Foundations to develop biodiversity in forests. The eco surcharge realized over and above entry fees in Protected Areas can be ploughed back for development of Protected Areas and welfare of the Protection Staff.
- 5.18.10. Sponsorships and patronization by Industrial houses, Corporate Offices, Religious Trusts, NGOs of repute, financial Institutions, Mining Associations, NRIs and Non Residents of Rajasthan can be permitted for development of forestry and wildlife.

5.19. Monitoring and Evaluation

- 5.19.1. Generally the nature of forestry programme is such that due to long gestation period of the crop, management has to wait for a long time for return. Hence, Monitoring and Evaluation is necessary to get feedback for analysis and taking corrective measures. Ecological,

social and financial indicators both qualitative and quantitative can be preset for assessment of each activity.

- 5.19.2. Evaluation of project activities at the end of the program will help to take corrective action for future program. Therefore, indicators can be decided thoughtfully at the conceptual stage so that evaluator can understand them for development of proper perspective. Logical Framework Approach should widely be followed in future project design.
- 5.19.3. Both internal and external agencies can be deployed for carrying out Monitoring and Evaluation. Forest Department will institutionalize the Monitoring and Evaluation process and focus on a proper organizational set up. Participatory evaluation is suggested to get proper feedback from beneficiaries by following Participatory Rural Appraisal technique.

5.20. Review of Implementation of State Forest Policy

A State Forest Advisory Council will be established at the level of Hon'ble Chief Minister of Rajasthan with Cabinet Ministers in charge of Finance, Forest, Tribal Development, Urban Development, Mining and Tourism besides members from top bureaucracy to render guidance after reviewing the state forest policy and its implementation from time to time.