International Journal of Management, IT & Engineering
Vol. 7 Issue 9, September 2017,
ISSN: 2249-0558 Impact Factor: 7.119
Journal Homepage: http://www.ijmra.us, Email: editorijmie@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage as well as in Cabell's Directories of Publishing Opportunities, U.S.A

A STUDY ON FOREST RESOURCE MANAGEMENT SYSTEM IN TAMIL NADU

K. SATHISHKUMAR*

G. NATARAJAN**

Abstract

This paper brings out the Forest management has to maintain the stability, natural dynamic, and health of forests. Timber production is a core goal for forest management, but clear cutting, over-harvesting, and selective logging severely reduces the quantity and quality of natural forests. Forests supply timber, fuel, pulpwood and other varied products, timber production was the major goal for forest resource management during that time, and only a few people were concerned about the sustainability of forest resources. Forests play an important role in the conservation of natural resources. To achieve optimally productive forests ultimate aim of the State forest management will be capable of providing timber and non-timber products, apart from the ecological services without an unnatural change in the composition of the forests. The harvest of forest products will be governed by the availability of forest ecosystem management refers to maintaining the basic structure and function of ecosystems through time for sustainable multiple uses, and to enhancing the quality of the environment to best meet the needs of society. Forests meet domestic fuel wood needs of local people and fodder needs of cattle population. Non-timber Forest Producers (NTFP) also play a key role in the tribal and rural economy. Forestry is a major source of income for forest dwellers and those on the periphery of forests. Efforts are on to evaluate the ecosystem services in the State.

Keywords: Forest Management, Natural Forests, productive forests, ecosystem management, Forest dwellers.

* Ph. D Research Scholar, Department of Economics, Annamalai University, Annamalai Nagar 608 002.

** Assistant Professor, Department of Economics, Annamalai University, Annamalai Nagar 608 002.

INTRODUCTION

A century ago, a large area of forests disappeared worldwide, because timber production was the major goal for forest resource management during that time, and only a few people were concerned about the sustainability of forest resources. There are two different points of views concerning forest: one sees the forest as a product by human activity that "people may conquer nature"; the other regards the forest as a natural product, the construction, and usage of which should comply with the natural rules of forest dynamics. The establishment of protected areas of the representative forest ecosystem in bioregions is a critical method to guarantee ecosystem service for benefiting present and future generations. Forest management has to maintain the stability, natural dynamic, and health of forests. Timber production is a core goal for forest management, but clear cutting, over-harvesting, and selective logging severely reduces the quantity and quality of natural forests. Many countries ban timber harvesting in old growth forests or natural forests and may provide alternative sources of timber supply by establishing new plantations

Forests play an important role in the conservation of natural resources. Forests contribute significantly towards environmental upkeep climatic balance and are mainly instrumental for the rainfall pattern. They are the source of rivers ensuring livelihood security for innumerable people who are dependent on them and also perform other vital functions such as providing protection from natural disasters, in the form of shelter belt plantations. They are the treasure chests of biodiversity and home to most of the world's vast array of life forms offering needed habitat for wildlife and a wide diversity of medicinal plants while also ensuring livelihood support to the tribal's living within the forest areas. Forests also prevent soil erosion besides serving as a foster mother for agriculture. Concerns about greenhouse gases, declining agricultural productivity and decreasing water availability and increasing pollution levels make forests more important than ever before.

STATE ECONOMY: CONTRIBUTION OF FORESTS

As per the revised estimates for 2012-13, forests contributed Rs.82.77 Crores of revenue to the State exchequer during 2012-13 through the sale of sandalwood, teak and other timber species, babul, eucalyptus hybrid, MFP, etc. However, it must be noted that the economic contribution of forests is not fully reflected in the standard system of national/social accounts.

Not all forest produce enters the market. Moreover, neither market mechanisms nor systems of social and national accounts provide a firm basis for evaluating the ecosystem contributions of forests as well as some of the other contributions. Forests meet domestic fuel wood needs of local people and fodder needs of cattle population. Non-timber forest produces (NTFP) also play a key role in the tribal and rural economy. Forestry is a major source of income for forest dwellers and those on the periphery of forests. Efforts are on to evaluate the eco-system services in the State.

INCREASING TREE COVER OUTSIDE FORESTS

The National Forest Policy, 1988 mandates bringing in one-third of the geographical area of the country under tree cover for ecological amelioration. As the scope for increasing the forest area was not feasible, enhancing tree cover outside the forests was given more importance. To accomplish this mission, tree cultivation outside forests has been taken up in private farm lands, fallow lands, in other common lands like the tank foreshores, other promote lands, roadsides, railway margins and canal banks. The criteria for the choice of species recommended for the farmers for their lands are that they would be profitable and drought resistant. The main focus will be to create tree resources outside forest areas for meeting the needs for tree products, besides providing various environmental benefits relating to the abatement of air pollution, reduction of noise pollution, carbon sequestration and prevention of soil erosion on the canal banks. In order to achieve the national goal of 33% tree cover, major schemes like JICA assisted Tamil Nadu Biodiversity Conservation and Greening Project (TBGP), tree planting on a large scale on the birthday of the Hon'ble Chief Minister, teak planting on padugai lands, planting in tank foreshores, etc. were undertaken. These programs are expected over time to help bridge the gap between the supply of and demand for fuel wood and timber in the State.

BIO-DIVERSITY CONSERVATION

Tamil Nadu ranks 1st among all the States in the country with 5640 plant species. The Tamil Nadu Biodiversity Conservation and Greening Project will be continued during 2015-2016 with an allocation of Rs.122.68 Crores. The Angiosperm diversity of India includes 17672 species. The plant diversity of 533 endemic species, 230 rare species, 1559 species of medicinal plants and 260 species of wild relatives of the cultivated plant is the testimony to the biodiversity richness of the State. The Pteridophytes diversity of India includes 1022 species of which

Tamilnadu has 184 species. The faunal diversity of Tamilnadu includes 165 species of fresh water Pisces, 76 species of Amphibians, 177 species of reptiles, 454 species of birds and 187 species of mammals.

The reserve forests and protected areas are repositories capturing a wide array of biodiversity in the State. The vegetation in Tamil Nadu varies depending upon climate, altitude, and nature of the soil. It can be broadly divided into four categories 1) The coastal vegetation 2) The island vegetation 3) Vegetation of interior plains 4) Vegetation of Hills and Mountains. The coastal vegetation consists of estuarine forest and coastal tropical dry evergreen forests. The island vegetation consists of salt marshes and mangroves. The vegetation of interior plains includes the southern tropical thorn forests, the Carnatic umbrella thorn forests, etc.

The vegetation of hills and mountains include the following forest type's namely dry deciduous forests, moist deciduous forests, semi evergreen forests and wet evergreen forests including the shoals. The grass lands, bamboo forests, reed forests are also other important forest types. The Western Ghats is one of the 25 global hotspots and one of the 3 mega centers of biodiversity in India. The forests of Kanyakumari, Kalakadu Mundanthurai Tiger Reserve, Kodaikanal, Annamalais, Mudhumalais, Mukkurthi, Srivilliputtur, owe their richness in flora and Fauna due to their position in the Western Ghats.

Forest management in Tamil Nadu is mainly conservation focused. Biodiversity conservation has taken the center stage in forest management. In all the recent working plans of Tamil Nadu, biodiversity conservation has been included as a chapter. Similarly, the management plans for protected areas in the State identifies local biodiversity, suggests strategies and directions to conserve biodiversity. The management plans and working plans of the Forests Department have contributed significantly to protection, development, and conservation of biodiversity in the State.

BIODIVERSITY AND GENETIC RESOURCE CONSERVATION

The State has a spectrum of forest vegetation types ranging from wet evergreen forests to moist deciduous, dry deciduous, sholas, grass lands and scrubs forests. The Western Ghats, the longest hill range in the State is one of the 25 global hotspots of biodiversity and one of the three

mega centers of endemism in India. Out of the 17,672 flowering plants recorded in India, Tamil Nadu accounts for 5,640 species, which gives it the pre-eminent position in angiosperm diversity. Many of these are endemic and red-listed species. Tamil Nadu has recorded 165 species of fresh water fishes, 76 species of amphibians, 177 species of reptiles, 454 species of birds and 187 species of mammals. Invaluable trees like Sandal, Teak and Rosewood and wildlife such as tiger, elephant, lion-tailed macaque, grizzled giant squirrel, Nilgiri Tahr and numerous rare species of fauna and innumerable species of flora including important medicinal plants are found in the forests of the State. Sanctuaries and National Parks have been established for the conservation of flora and fauna under the Wildlife Protection Act, 1972. Protected areas are repositories of biological resources to be preserved for posterity.

Forest areas, which support a viable population of flagship species, need to be brought gradually under protected area management to ensure better conservation status for the rare and endangered wildlife. In Tamil Nadu, 5,468 sq. km. of land area (23.9% of forest area) has been brought under Protected Areas Network so far. There are 4 Tiger Reserves which support a sizable population of tigers, 10 Wildlife sanctuaries, 14 Birds sanctuaries, 5 National Parks, one Conservation reserve and four Elephant Reserves. The Gulf of Mannar Biosphere Reserve is the only one of its kind in the country. Habitat improvement and other developmental works are carried out in these National Parks, Wildlife Sanctuaries, and Biosphere 14reserves under State forestry and centrally sponsored schemes. The Japan International Co-operation Agency (JICA) assisted Tamil Nadu Biodiversity Conservation and Greening Project (TBGP) is an important initiative in biodiversity conservation.

FOREST PROTECTION

The forest wealth of the State is often vulnerable to damage and destruction due to the illicit felling of trees, ganja cultivation, fire, encroachment, and poaching of wildlife. To deal effectively with the smuggling and pilferage of forest wealth and to prosecute the offenders, detective flying squads have been engaged. Forest Protection Squads have been engaged to curb the smuggling of valuable forest producers like sandalwood, rosewood, teak, etc. In order to control the offenses, there are at present 13 Forest Protection Squads under the Protection and Vigilance wing functioning as two groups all over the State viz. Northern Group (7 FP Squads) and Southern Group (6 FP Squads) besides 5 Flying Squads. Further, 17 forest stations, 112

forest check posts, and 11 roving check posts are functioning at important and vulnerable points throughout the state. Efforts are being taken to strengthen the infrastructure for forest protection and to equip the protection staff with facilities like firearms, vehicles, wireless equipment, etc. Encroachment of forest lands by estate owners and adjoining patta holders is a serious problem. The action is being taken by Forest department to evict such encroachments in co-operation with revenue and police officials. Efforts are also being taken to strengthen the infrastructure enabling the department to curtail fresh encroachments. With a view to implementing innovative combat and patrol strategies and offence methodologies, the forest personnel has been imparted special training.

The protection works include consolidation of forest boundaries by erecting cairns, fire prevention through fire line maintenance and cutting new fire lines, involving local people in firefighting through the creation of Joint Fire Management Committees, employing fire watchers on a regular basis during the dry season, constructing fire watch towers and employing anti-poaching watchers. In order to bring about a qualitative change in overall protection status of forests in Tamil Nadu, provision of facilities like two wheelers for Forest Guards, Forest Watchers, cell phones, internet facilities, Secret Service Fund, etc. need to be ensured. This will enable better mobilization, effective communication, gathering, and transmission of intelligence inputs.

FOREST RESOURCES MANAGEMENT STRATEGY

The management of forests rests primarily with the State Government. The National Forest Policy, 1988 has laid down guidelines for preventing harm to forests from encroachment, fires and grazing, for augmentation of forests' water resources and on issues related to shifting cultivation, forest extension, education, research, personnel management, etc. The principal aim of forest policy is maintenance of environmental stability and restoration of ecological balance through conservation, up gradation and increase in the tree cover. The Tribal Forests Rights Act(TFRA) is the basis for evolving forest policies pertaining to the needs of the forest-dependent communities in consonance with the need for sustainable forestry.

The management of forests in Tamil Nadu is based on the National Forest Policy. The National Forest Policy, 1988 has outlined the management principles, concepts, and approaches in forest management. Maintenance of environmental stability, restoration of ecological balance,

conservation of the natural heritage i.e. the forests with the biological diversity and providing the Habitats and sustainable environment for mankind are some of the important objectives of the National Forest Policy. The use of forests for providing natural resources for economic growth is only to be considered as a second option. Environmental stabilization, forest protection, wildlife, biodiversity conservation and protection of genetic resources, increase productivity from forests, efficient management of natural capital, water resources management, augmentation and increasing forest cover/tree cover are some of the significant functional objectives of the State Forest Policy.

CATCHMENT AREA MANAGEMENT

The objective of catchment area management is to protect and conserve the soil, water and other natural resources including human resources and their prudent utilization to ensure the development of inhabitants living within the watershed, by well-designed schemes and its effective implementation. Schemes should be so conceived that when implemented will ensure that available natural resources within the forest are not destroyed but effectively conserved and developed for future generations. From 1997, Tamilnadu Afforestation Programme with this objective has been implementing developmental activities in forest areas within the watersheds. This program is being implemented for the past 11 years with the complete co-operation, support and active participation of the people. Rainwater harvesting, good engineering structures like check dams and percolation ponds have been constructed in forests, with the intention of augmentation of water resources and to provide scope for an increased level of underground water availability. Till date, 26615 check dams and 3035 percolation ponds have been constructed. 1000 check dams and 300 percolation ponds will be constructed at a cost of Rs. 24.27 crores.

Over 600 species of medicinal plants that could be brought to commercial usage are found in Tamil Nadu and more than 90% of them occur in forest areas. Owing to increased demand for medicinal plant products in recent years, some of the species are facing the permanent loss. Hence, in order to conserve and augment medicinal plant resources in the State for raising plantation of important species in select locations, facilitating value addition including processing, storage and strengthening seed sources and knowledge base through improved inventory and database management.

Environmental conservation is an integral part of socio-economic development. The spiraling population and increasing industrialization have posed a serious challenge to the preservation of our terrestrial and aquatic ecosystems. Conservation of our natural resources like land, water, forests, and biodiversity are important for the ecological security of Tamil Nadu. Degradation of the environment affects the poor and underprivileged, the most. Hence, by protecting the environment, the economic interests of the poorer sections of society are also safeguarded. Sustainable development is the need of the hour and this is possible only by promoting awareness about the need to protect the environment. Several initiatives have been taken by this Government for pollution abatement in the rivers and lakes besides promoting environmental awareness among the school children and the public at large.

COMMUNITY FOREST RESOURCES MANAGEMENT

Protected areas will be integrated with the sensitivities of local populations and protected area management planning will be based on the optimization of local community resources and the use of noninvasive benefits from the PAs directed towards the neighboring population, on village eco-development principles The forests in the vicinity of habitations will be managed for livelihood needs of the neighboring populations. To achieve optimally productive forests ultimate aim of the State forest management will be capable of providing timber and non-timber products, apart from the ecological services without an unnatural change in the composition of the forests. The harvest of forest products will be governed by the availability. However, strategy for widening the production base beyond forests will be pursued to ensure sustainable use of the land resources of the country.

MODERNISATION OF THE STATE FOREST MANAGEMENT

Modernization of the management planning (Working Plan) units with equipment, infrastructure and manpower. This may include forest inventories, training and satellite imagery processing, and GIS facilities. This will also include professional services such as ecologists and sociologists for relevant inputs. Forest Land Information System for land records, with modern and empowered survey, and land record maintaining mechanisms for documenting the legally recognized individual rights, concessions, ownerships including those under the Scheduled Tribes and other Forest Dwellers (Recognition of Forest Rights) Act.

Forest boundary demarcation by providing assistance for the state-of-the-art infrastructure, training and outsourcing survey work, fixing permanent boundary pillars, updating the forest block indices and compartment histories. Installation of forest fire surveillance and warning systems, along with fire management planning in participatory mode. This fire management system will also be integrated with a national network for forest fire surveillance and monitoring. Assistance for general infrastructure for accommodation in remote areas, communication, improvement of road network, etc., will also be a part of this

STRENGTHENING FOREST MANAGEMENT

A National Forestry Information system may be set up, along with networking with the States, for tracking the changes in forest development, harvesting, trade, and utilization scenarios. This will include information on non-timber forest produce (NTFP) resources including medicinal and aromatic plants. The National Working Plan Code may be revisited for incorporating aspects dealing with ecological and biodiversity concerns of the forest areas. This will also include NTFP, medicinal and aromatic plant resources. A mechanism for internationally recognized independent sustainable forest management certification regime for forest resources and products.

APPROACHES OF FOREST RESOURCE MANAGEMENT

Forest resource management, since the forest ecosystem, is characterized by diverse biota, multiple layers, and functional diversity. The forest ecosystem contains hundreds to thousands of species with diverse richness, population structure, distributed patterns, and life cycle. There are three major components of the food chain in an ecosystem producer, consumer, and decomposer; the food chain reveals one of the interactions amongst organisms. Each organism participates in a number of interactions, both with other organisms and with factors in the physical environment. Other major kinds of interactions include competition, plant herbivore, plant parasite, and prey predator, etc. Competition in plants is manifested largely through the struggle for light to obtain enough energy for photosynthesis, and plants that grow in the shade of others have evolved mechanisms for carrying on photosynthesis at low light intensity. The competition for water and nutrients is important for plants as well. Plants are able to use light energy, water, and nutrients to manufacture their own foods this is autotrophic production within

the ecosystem. Competition in animals is a struggle for food, habitat, or territory. Animals that feed on plants are herbivores or primary consumers.

Forest resource management should consider not only the components of an ecosystem but also the ecosystem processes. If people over-harvest one component of an ecosystem, it might affect the others, for example, the interaction among biota and with their abiotic environment even dually affects the entire ecosystem. Thus, the holistic ecosystem approach to forest resource management is being put in practice. Although a widely accepted theory of forest ecosystem management has not been defined, forest ecosystem management refers to maintaining the basic structure and function of ecosystems through time for sustainable multiple uses, and to enhancing the quality of the environment to best meet the needs of society.

REFERENCES

Adhikari, B. (2002) Property Rights, and Natural Resource: Socio Economics Heterogeneity and Distributional Implications of Common Property Resource and Management. EEE Working Papers Series-No. 3, University of York, UK.

Agarwal, B. (2001) Participatory exclusions, community forestry, and gender: an analysis for South Asia and a conceptual framework. *World Development* 29:1623-1648.

Bhat, S. (2010) Natural Resources Conservation Law. Sage Publications Pvt. Ltd, New Delhi, 13.

Bowes, M. and R. A. Sedjo (1993) "Impacts and Responses to Climate Change in Forests of the MINK Region," *Climatic Change* vol. 24, (June), pp. 63-82.

Economic Appraisal 2013-14, Evaluation and Applied Research Department, Government of Tamil Nadu.

Environment and Forests Department, Policy Note: 2015- 2016.

Forest Survey of India 2011.

Jeffrey, C.M., Lassoie, P.J. and Bedford, L.B. (2007) Conserving Biodiversity and Ecosystem Function through Limited Development: An Empirical Evaluation. *Conservation Biology*, 22, 70-79.

Lasgorceix, A. and Kothari, A. (2009) Displacement and Relocation of Protected Areas: A Synthesis and Analysis of Case Studies. *Economic & Political Weekly*, 49, 37-47.

Million B (2011) "Forest plantations and woodlots in Ethiopia" African Forest Forum; 1(12):11-15.

Report on Environment and forest department 2011.

Sekher, Madhushree (2001) 'Organised Participatory Resource Management: Insights from Community Forestry Practices in India', Journal of Forest Policy and Economics, Elsevier Science, The Netherlands, Vol 3/ 3-4: 137-154.

State forest report 2014-15.

State of Forest Report2011.

Yitebitu M, Zewdu E, Sisay N (2012) Ethiopian forest resources: current status and future management options in view of access to carbon finances. Prepared for the Ethiopia climate research and networking and UNDP. Addis Ababa; Ethiopia. pp. 15-20.