

**EXPERT COMMITTEE FOR MODERNISATION IN KERALA FOREST
DEPARTMENT**

The Expert Committee

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FINAL REPORT

ACKNOWLEDGMENTS

The Committee constituted as per GO (MS) No.22/2010/F&WLD dated 21.5.2010 has great pleasure and satisfaction in submitting this report to the government. The Committee has made earnest efforts to collect and collate as much information as possible within the broad parameters of the terms of reference prescribed by the government. In view of the increasing necessity of giving importance to the welfare of the forest dwelling tribal population in the sustainable management of forest resources and adopting the strategy of joint forest management to achieve that end, a separate chapter namely '*Conservation of Forests and Welfare of Tribals*' has been specifically included in the report.

This report is the outcome of the discussions and deliberations with a large number of experts and representatives of organizations working in the forestry and environment sector. The committee is deeply indebted to each and every one of them and also places on record its sincere appreciation and gratitude to the following organizations:

- 1) Indian Forest Service Association, Kerala Chapter
- 2) Gazetted Forest Officers Association, Kerala
- 3) Kerala Forest Rangers Association
- 4) Kerala Forest Protective Staff Association
- 5) Kerala Forest Drivers Association
- 6) Kerala NGO Union
- 7) Kerala NGO Association
- 8) Joint Council, Kerala
- 9) Kerala Government Officers Association

- 10) Kerala Forest Ministerial Staff Union
- 11) Kerala Forest Research Institute, Peechi
- 12) Institute of Forest Genetics and Tree Breeding, Coimbatore
- 13) Kerala Agricultural University, Mannuthy, Thrissur
- 14) World Wide Fund for Nature - India

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ABBREVIATIONS

ABP	Agasthyavanam Biological Park
AEE	Assistant Executive Engineer
ANR	Assisted Natural Regeneration
APO	Annual Plan of Operation
CAMPA	Compensatory Afforestation Fund Management and Planning Agency
CBD	Convention on Biological Diversity
CESS	Centre for Earth Science Studies
CFM	Community Forest Management
CHR	Cardamom Hill Reserve
CUG	Closed User Group
CWRDM	Centre for Water Resources Development and Management
DDC	Dewey Decimal Classification
DFEIC	District Forest Extension and Information Centre
EDC	Ecodevelopment committee
EE	Executive Engineer
FDA	Forest Development Agency
FIB	Forestry Information Bureau
FMIS	Forest Management Information System
FOSS	Free and Open Source Software
FRA	Forest Rights Act
FRI	Forest Research Institute
FSI	Forest Survey of India
GD	General Diary
GIM	Green India Mission
GIS	Geographic Information System
GPS	Geographic Positioning System
HNL	Hindustan News Print Ltd
ICT	Information and Communication Technology
IDEAS	Information and Data Exchange Advance System
IFGTB	Institute of Forest Genetics and Tree Breeding
IHRD	Infrastructure and Human Resource Development
IMG	Institute of Management in Government
ISRO	Indian Space Research Organisation
JFM	Joint Forest Management
JFMCs	Joint Forest Management Committees
JICA	Japan International Co-operation Agency
KAU	Kerala Agricultural University
KFDC	Kerala Forest Development Corporation
KFRI	Kerala Forest Research Institute

KILA	Kerala Institute of Local Administration
KSEB	Kerala State Electricity Board
KSITM	Kerala State Information Technology Mission
KSLUB	Kerala State Land Use Board
KSREC	Kerala State Remote Sensing Centre
KSWAN	Kerala State Wide Area Network
KVASU	Kerala Veterinary and Animal Sciences University
LAN	Local Area Network
LEAF	Lawyers Environmental Awareness Forum
MCM	Million Cubic Metres
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MPPF Act	Madras Preservation of Private Forests Act, 1949
MU	Million Units
MW	Megawatt
NAP	National Afforestation Programme
NAPCC	National Action Plan on Climate Change
NGIs	Non Governmental Individuals
NGOs	Non Governmental Organizations
NNRMS	National Natural Resources Management System
NOC	No Objection Certificate
NPV	Net Present Value
NWFP	Non Wood Forest Produce
ODC	Oxford Decimal Classification
OPIL	Oil Palm India Limited
PAR	Performance Appraisal Reports
PCK	Plantation Corporation of Kerala Ltd.
PDA	Personal Digital Assistance
PFM	Participatory Forest Management
PHC	Primary Health Centre
PIL	Public Interest Litigation
POB	Prohibitory Order Book
PTA	Permanent Travelling Allowance
PTR	Periyar Tiger Reserve
PWD	Public Works Department
RDF	Restoration of Degraded Forests
RET	Rare, Endangered and Threatened
RGGVY	Rajiv Gandhi Grameen Vidyuthikaran Yojana
RPL	Rehabilitation Plantations Limited
SFCK	State Farming Corporation of Kerala Ltd.
SFDA	State Forest Development Agency
TBGRI	Tropical Botanic Garden and Research Institute
TRTI	Tribal Research and Training Institute

UNEP	United Nations Environment Programme
VSS	Vana Samrakshna Samithi
WAN	Wide Area Network
WII	Wildlife Institute of India
WTI	Wildlife Trust of India
WWF	World Wide Fund for Nature – India

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MODERNISATION IN KERALA FOREST DEPARTMENT

EXECUTIVE SUMMARY

The Western Ghats is a rich and unique repository of rare and endangered flora and fauna. Endemism is extremely high in the evergreen, semi evergreen, moist deciduous, montane and sub-tropical sholas & grasslands and dry deciduous forest eco-systems in this landscape. Though the Southern Western Ghats in Kerala receives an average annual rain fall as high as 3,000 mm, the State experiences droughts followed by floods since a significant portion of the precipitation is discharged into the sea through the 41 west flowing and three east flowing rivers. The organic rich soil on the Western Ghats, which supports luxuriant vegetation is highly erodible in the absence of multi-tiered dense forests along its steep slopes. Forest fires not only destroy the flora and fauna, but also deplete the organic content and water content of the soil. Unless the forests along the slopes in the river basins of the Western Ghats are properly conserved, the result will be floods, droughts, reduction in lean season flow in the rivers, accelerated sedimentation in reservoirs, reduction in the life span of hydro electric and irrigation projects and reduction in the availability of water for drinking, agriculture, generation of energy, health and sanitation, industry, tourism and such other activities which are essential for the social and economic development of society. Thus the economic security, health security, food security, energy security and water security of the State are largely dependent on the ecological security of the Western Ghats. The reduction in availability of water and the consequent reduction in availability of food and forage in the forest areas lead to straying of wild animals to the agricultural lands along the periphery of forests resulting in crop damage and injury and death to humans. In view of the aggravating problems of climate change and global warming, the functions of the forests along the Western Ghats as a carbon sink have to be maximized by sustaining its biomass production. The biodiversity in this region has to be conserved in view of its ecological, genetic, social, ethnical and economic importance. To ensure the ecological security of Western Ghats there should be remarkable changes in the approach of the political administrators, planners, forest managers, other agencies engaged in developmental activities and people at large. The Constitution of India has been amended to include, in the Directive Principles of State Policy and in the Fundamental Duties of the citizen, necessary provisions to make conservation of forests, wildlife and environment a duty of the State and citizen. The judiciary has widely

adopted the Doctrine of Public Trust in the field of conservation of natural resources for the common good of the society. Without the active support of the judiciary, media and the people who are enlightened and rationally sensitive to the issues of conservation, no effective steps for conservation of forests, biodiversity and environment can be implemented. The implementation of Forest Rights Act has conferred several rights on the forest dwelling tribes including the right of possession of land which they had occupied on or before 13.12.2005, developmental rights and the right to collect, use and sell the non wood forest produce. The Forest Department has decided to change the strategy for forest protection from policing and enforcement of various Acts and rules to joint forest management with active participation of all stake holders. Therefore, apart from implementing programmes and schemes aimed at protection and conservation of forests, the forest managers will have to prepare the stake holders through extensive nature education programmes to shoulder their responsibilities in the conservation of natural resources. In view of the above facts, the Committee has made the following recommendations in order to instill more transparency, accountability and professionalism into the forest management system for improving efficiency and productivity:

Need for New Approach in Management of Biological Resources

1. In view of the ecological, scientific and economic importance of the Western Ghats, all the available natural forests in the State shall be managed scientifically to optimize and sustain biodiversity values, biomass production potential, capability to conserve water, sequester and lock maximum carbon and other ecological services as well as the means of livelihood of the forest dwelling tribals and other forest dependent communities.
2. In view of the adverse impact of global warming, climate change and depletion of biodiversity wealth, the policies and programmes of the department shall be oriented to enrich tree cover and biodiversity in order to ensure water security, food security, energy security, health security, clean air and clean living environment. (para 1.6)
3. The boundaries of protected areas may be rationalized to include higher biodiversity value areas within the ecological boundaries of the habitats, with special emphasis on conservation of rare, endangered and threatened species. (para 3.15, 3.16 & 3.17)

Need for Landscape Level Planning and Land Use Policy

4. Planning of all activities for conservation and development in and around forest areas shall be done in an integrated manner at landscape level co-ordinating the activities of all other government and non government agencies. The use of land shall necessarily be in accordance with the land capability classification for which an integrated land use policy for the state may be formulated. (para 3.21 & 3.22)

Management on Watershed and Ecosystem Basis

5. The action plans for management interventions shall be drawn up based on watersheds or ecosystems within the broad parameters of landscape-level planning and land use policy of the area. (para 3.23)

Catchment Area Management for Water and Energy Security

6. The catchment areas of reservoirs of hydro electric, irrigation and drinking water projects shall be managed with a view to improving the quality of forests in the catchment area and the lean season flow in the streams joining the reservoir. (para 3.24)

More Scientific Input to Working Plans and Management Plans

7. The working plan of territorial divisions and the management plans of protected areas shall be prepared based on data collected more scientifically and systematically on long term basis for which projects may be formulated and implemented for long term monitoring of biodiversity, ecological services and economic returns. For this purpose the service of experts in disciplines such as forestry, wildlife management, environmental science, botany, zoology and sociology may be enlisted. The structure and composition of the team for the preparation of working plans and management plans may be modified by including research assistants and research associates for the above purpose. (para 3.26, 3.27 & 3.28)

Management of Natural Forests

8. The present policy of ban on clear felling and selection felling in the natural forests shall be continued subject to the condition that dead and wind fallen trees from areas other than Protected Areas can be removed with strict check and

monitoring, provided it is economically viable, without constructing additional roads. (para 3.30)

Management of Sandal Reserves

9. The present arrangement shall continue with more vehicles, weapons and communication facilities. More tribal watchers may be engaged for the protection of sandal. Dead and wind fallen sandalwood trees may be extracted. The question of extracting sandalwood trees of and above a particular girth shall be put to a public debate for taking decision in view of the acute protection problems and experiences in other states. (para 3.31)

Forest Leases

10. Large extents of forest areas had been given on lease for plantation and agricultural purposes in the past. In view of the ecological and environmental concerns, the following guidelines are prescribed for implementation:
 - (i) as and when lease periods of private plantations expire such forestlands under lease may be taken over and gradually reverted to forests.
 - (ii) lease rent may be suitably revised, taking into consideration the net present value (NPV) of the forests as fixed by Hon'ble Supreme Court.
 - (iii) use of pesticides and weedicides may be regulated taking into consideration the long-term productivity of plantations and environmental impact as well as health hazards of using such pesticides and weedicides.
 - (iv) an inventory of all lease areas may be developed and made available on the web portal of the department.
 - (v) patches of forest areas with natural vegetation, if any available interspersed in plantation areas shall be retained and conserved as per a management plan.
 - (vi) use of organic fertilizers, organic pesticides and organic insecticides may be encouraged.
 - (vii) cultivation of cash crops in very steep portions in lease areas should be discouraged.

- (viii) lease conditions may be modified to the effect that effective measures shall be implemented to improve the soil and water conservation in the lease area on micro watershed basis. (para 3.34)

Eco-Restoration Works

- 11. While undertaking enrichment planting, the natural regeneration of indigenous species shall not be cut and removed in the name of pre-planting operations such as slash felling. Weeding shall not be done in the entire treatment area since it is likely to expose the planted seedlings to attack by diseases, insects and wild animals. Invasive alien species such as *Mikania* and *Mimosa invisa* shall be eradicated and soil and moisture conservation works shall be undertaken. (para 3.36)

Conservation of Special Sites Like Myristica Swamps

- 12. The forest areas supporting special ecosystems like Myristica swamps may be conserved under special management plans. (para 3.37)
- 13. Illegal and destructive methods of fishing and introduction of exotic fishes in the water bodies in the forest areas shall be prevented. (para 3.10)

Consolidation of Protected Areas and Other Forest Areas

- 14. In order to minimize the adverse impact of fragmentation and man-animal conflicts, the following action plans are proposed:
 - (i) corridors may be established by acquisition of cultivated areas separating two or more forest habitats.
 - (ii) enclosures within forest areas such as KP Estate in the buffer zone of Silent Valley National Park and Downton Estate adjoining Periyar tiger reserve etc. may be acquired.
 - (iii) funds from State Compensatory Afforestation Fund Management and Planning Agency (CAMPA) and XIII Finance Commission Award may be utilized for this purpose.

- (iv) financial assistance from institutions such as WWF and Wildlife Trust of India may be availed and utilized for this purpose.
- (v) schemes for voluntary resettlement of human habitations from the forest area may be formulated and implemented. (para 3.38)

Management of Eco-Tourism

15. In order to achieve the basic objectives of eco-tourism and to bring people closer to nature, the following action plans are prescribed:

- (i) each eco-tourism spot shall have a separate management plan.
- (ii) the management plan shall contain specific programmes and items of works for improving nature education and interpretation programmes.
- (iii) the eco-tourism programmes shall be implemented through joint forest management (JFM) in order to ensure means of livelihood to the members of vana samrakshana samithis (VSS) and eco development committees (EDC).
- (iv) VSS/EDC members shall be trained in various aspects such as management of visitors, education and interpretation programmes, forest fire control and in rescue operations in addition to waste management.
- (v) only primary visitor amenities such as toilet, cafeteria and information centre need be developed and no other civil construction shall be permitted, except for the security and safety of the visitors.
- (vi) there shall be specific and regular programme for management of both liquid and solid waste with special reference to plastic.
- (vii) the visitors to eco-tourism spots shall be given a briefing about the peculiarities of the biodiversity wealth of Kerala, importance of conserving soil and water, uniqueness of the eco-tourism site, dos and don'ts with regard to waste disposal and general conduct.
- (viii) site-wise long term project for monitoring all eco-

tourism spots shall be instituted by Additional Principal Chief Conservator of Forests (E&TW) to study the environmental impact on the ecosystem and socio-economic impact on the JFM institutions and their members by availing the services of an expert multi disciplinary group.

- (ix) eco-tourism activities shall not be extended to other spots till the activities in the existing eco-tourism spots are properly and scientifically studied and environmental impact assessed by multi-disciplinary group of experts.
- (x) Divisional Forest Officers, Wildlife Wardens, Range Officers and Assistant Wildlife Wardens shall be made responsible for the proper conduct of eco-tourism activities within their respective jurisdiction.
- (xi) a web site shall be developed for eco-tourism activities, so that each visitor can get sufficient information even before he visits the area. (para 3.40)

Management of Plantations

16. The management practices shall be re-oriented and intensified to achieve maximum productivity for which site-specific plans may be prepared and implemented. The maintenance operations in newly raised plantations may be continued for two more years, if necessary, after the initial three years' maintenance operations. (para 3.41)
17. Use of chemical fertilizers, fungicides, weedicides and insecticides shall be banned within forest areas. (para 3.45)
18. Clear felling of plantations along steep terrains shall be discouraged. (para 3.45)
19. Teak plantations which fall under quality class IV and quality class V may not be clear felled for replanting. Seedlings of indigenous locally available species may be tended or planted with a view to augmenting or enriching the growing stock in such areas. (para 3.42)
20. Rehabilitation of degraded forests or assisted natural regeneration shall be undertaken with due care and caution

after preparing a site-specific plan for the degraded forests in that locality. (para 3.43)

21. In view of the problems relating to management of plantations, marketing of produce and availability of labour, the clear felling of the teak of plantations and replanting may be rationalized and regulated in such a way that the extent of teak plantations to be felled and replanted every year is more or less equal to 1.5% of the total extent of teak plantations minus the extent of quality class IV and quality class V plantations which are proposed to be excluded from clear felling and replanting. (para 3.44)
22. Mechanisation may be introduced in a phased manner in planting and maintenance operations, logging and in timber depots. (para 3.46)

Plantations in Protected Areas

23. Eucalyptus and acacia plantation in sanctuaries and National Parks shall be extracted as quickly as possible for reverting such areas to natural forests, as a part of habitat restoration and prescriptions to this effect shall be incorporated in the management plans. (para 3.47)

Soil and Water Conservation

24. In all the management practices in forest plantations and natural forests, sufficient provision should be incorporated to implement scientific methods of soil and water conservation to ensure the water security of the state. Vegetative methods shall be preferred to engineering structures for soil and moisture conservation. The project viz., 'Jala Suraksha' which has been initiated in Thrissur forest division may be implemented in other divisions also. (para 3.48)

Protection of Mangroves and Wetlands

25. The present scheme to incentivise the private owners who have been maintaining mangrove vegetation by granting financial assistance may be continued. (para 3.49)
26. Schemes for protection of mangroves and wetlands may be formulated and implemented jointly by Kerala Forest

Department and local self government institutions, utilizing funds from Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and other sources and ensuring co-operation of the local people. (para 3.50)

Conservation of Sacred Groves.

27. The present scheme of granting financial assistance to sacred groves may be continued. Further, a scheme may be formulated and implemented for the preparation of the inventory of sacred groves and for documenting their importance from cultural, ecological and biodiversity points of view. (para 3.52)

Modernisation and Management of Human Resources

28. Taking into consideration various activities such as social forestry, protection of wildlife beyond the forest boundaries, managing man-animal conflicts, conservation of biodiversity outside forest areas including sacred groves, mangroves and wetlands, implementation of captive elephant management rules, eco-development and tribal welfare, joint forest management and nature education and extension, the strength and composition of the staff in the forest department may be increased and improved. The problem of acute shortage of technically qualified staff in forest veterinary unit, extension and education units, Forestry Information Bureau, Forest Library and Forest Museum may be immediately solved in order to improve the efficiency and output of such units. (para 4.4)
29. The process for regularising the temporary posts in social forestry wing may be expedited. (para 4.6)

Additional Staff for New Forest Stations

30. Additional staff required for new forest stations may be sanctioned. (para 4.11)

Recruitment and Training of Forest Guards, Foresters and Deputy Rangers

31. Forest Guards shall be posted to field or to any other office only after undergoing the induction training as in the case of constables in the Police Department. (para 4.12)
32. Instead of creating more additional posts of faculty for training on a permanent basis, experts in the field can be invited to teach courses on specialized subjects. (para 4.14)
33. The one-year induction training programme of Forest Guards may be got recognized as a diploma course in forestry by Kerala Agriculture University. An exclusive certificate course in wildlife management for Forest Guards and Foresters in association with the Kerala Veterinary and Animal Sciences University can also be thought of. (para 4.15)
34. Circle level forest protection forces consisting of twenty Forest Guards and five Foresters may be constituted and stationed at Kannur for Northern Circle, at Nilambur (North) for Eastern Circle, at Thrissur for Central Circle, at Munnar for High Range Circle and at Ranni for Southern Circle. (para 4.16)
35. A compulsory in-service training for 3 months shall be given to the Forest Guards before they are promoted to the level of Foresters and to the Foresters before they are promoted to Deputy Rangers. The in-service training should be imparted at least six months to one year prior to the expected date of promotion. (para 4.17)

Induction and In-Service Training to Ministerial Staff

36. Induction and in-service training may be imparted to ministerial staff regularly for which sufficient infrastructure and training facilities may be developed. Compulsory in-service training prior to promotions to the grades of Head Accountants and Senior Superintendents is also necessary to improve their functional efficiency. Lower Division Clerk shall not be posted directly to circle offices or to forest headquarters. Their postings should be regulated in such a way that they get exposure to the work in range offices as well as in division offices in the beginning of their career. (para 4.18)

Improvement of Training Facilities

37. The training facilities for the staff in the department shall be improved for which the following action plans are prescribed:
- (i) a State Forest Academy may be established by improving the existing facilities at Kerala Forest School, Arippa to provide training facilities at par with national training institutes. Similarly the facilities of Kerala Forest School, Walayar may also be improved to the level of national training institutes.
 - (ii) the development of infrastructure for training in Kerala Forest Schools, Arippa and Walayar shall be expedited, availing funds from the state government, central government and other sources.
 - (iii) all the trainees should be given better accommodation facilities in the trainee's hostel preferably bath attached single rooms.
 - (iv) a good stadium with facilities for indoor and outdoor activities should be developed in both the training schools.
 - (v) a swimming pool should also be constructed in the training schools so that swimming can be made mandatory part of the training.
 - (vi) since some of the faculty posted to the schools are either not willing or competent to undertake training activities seriously, certain modules of training can be outsourced to recognized institutions such as KFRI, TBGRI, IFGTB, CWRDM, CESS, IMG, KAU and KVASU.
 - (vii) the officers have to pass departmental tests prescribed in the service rules for their confirmation in service and for promotion. The departmental tests are conducted by the Kerala Public Service Commission. The subjects of the departmental tests can also be made a part of the curriculum in the training schools so that the trainees can participate in the departmental examinations of PSC even during the period of training. (para 4.20)

Forest Special Allowance

38. In view of the difficult living conditions and increasing occupational hazards, forest officers and other staff working in offices situated in difficult and very difficult forest areas may be granted forest special allowance at the rates of 10% and 15% of their basic pay respectively. (para 4.21)

Travel Expenses

39. The drawing and disbursing officers may be delegated with power to disburse traveling expense to Range Officers, Deputy Rangers, Foresters and Forest Guards as though it is inevitable payment to be regularized by additional allotment of funds subsequently in case of insufficiency of allotment of funds. (para 4.22)
40. The ceiling limit of travelling allowance for the staff of flying squad shall be revised to the amount eligible for the circle level officers and the Conservators of Forests (Inspection and Evaluation) shall be authorized to sanction travelling allowance for journeys of the flying squad staff outside their jurisdiction. (para 4.23)

Medical Reimbursement of Officers Working in Forest Areas:

41. Medical reimbursement has to be allowed to the officers of the Forest Department working in forest areas for the treatment availed by them even from the nearest private hospital in case of emergencies. (para 4.24)
42. In the case of serious injury or ailments sustained during the course of performance of their duties, the forest officers shall be given medical reimbursement for treatment such as vascular surgery, neuro surgery and thoracic surgery undergone by them in any specialty hospital even in the private sector. (para 4.25)
43. The department should provide health insurance facilities to all the staff who are working in the field. Insurance companies under the Government of India may be consulted to device a special health insurance policy to meet such eventualities. (para 4.25)

Parity in Pay and Allowances with the Police Officers

44. Parity in pay and allowances may be granted to the uniformed staff and other officers in the Forest Department with their counterpart officers in the Police Department. (para 4.26)

Creation of Training Reserve

45. A training reserve of fifty Forest Guards may be created in each of the two forest schools at Walayar and Arippa. A training reserve of twenty Forest Range Officers may also be created. (para 4.27)

Strengthening Social Forestry and other Activities in the Panchayati Raj Institutions.

46. A Forester and two Forest Guards may be posted in each of the 152 Block Panchayats in order to undertake and promote the activities such as implementation of Green India Mission, social forestry, conservation of sacred groves, mangroves as well as wetlands; and mitigating man-animal conflicts and to implement rules relating to captive elephants within their jurisdiction. Additional posts of 150 Foresters and 300 Forest Guards may be created for this purpose. (para 4.28. & 9.11)

Expertise for Special Functions in Wildlife Management

47. A group of experts consisting of a Forest Veterinary Officer, a Wildlife Biologist, a Wildlife Ecologist, a Botanist and a Social Scientist with specialization and experience may be constituted for a group of protected areas as indicated in the report in order to undertake studies, provide better veterinary care and to monitor animal health. (para 4.29)

Special Team for Survey of Forest Boundaries.

48. Circle level special survey teams may be constituted for undertaking survey, geo-referencing and digitizing of the boundaries of reserved forests, divisions, ranges and stations using modern equipment. In view of the difficulty in getting surveyors on deputation from the Department of Survey and Land Records, the Chief Conservators of Forests in charge of circles may be authorized to engage technically qualified surveyors on contract. One Forester and two Forest Guards may also be posted in these teams after being properly

trained in the use of modern survey equipment. (para 4.31 & 5.21)

Exclusive Staff for Joint Forest Management

49. One hundred and twenty posts of Forest Guards and sixty posts of Foresters may be created additionally for strengthening the functions of VSSs and EDCs. One sociologist, a facilitator and a clerk may be engaged at each forest development agency (FDA) and one sociologist, one economist, one accounts officer and two clerical staff may be engaged at State Forest Development Agency (SFDA), on contract basis using the amount earmarked for administrative expenses under National Afforestation Programme (NAP) or under other similar projects. (para 4.32)

Special Staff for Nature Education, Extension and Interpretation

50. In order to revitalize the activities relating to nature education, extension and interpretation, the offices of Director, Forestry Information Bureau, Public Relations Officer, Assistant Conservators of Forests (Extension), District Forest Extension and Information Centre and of Deputy Director (Wildlife Education) should be strengthened with necessary staff and facilities to formulate and implement constructive and meaningful programmes. For this purpose, twenty posts of Wildlife Assistants, twenty posts of Assistant Forest Publicity Officers and twenty posts of Data Entry Operators may be created. (para 4.35 & 4.36)
51. The following strategies and action plans are prescribed: (para 4.37)
- (i) Director, Forestry Information Bureau shall be an officer of and above the rank of Conservator of Forests, preferably with aptitude for extension and education activities.
 - (ii) Principal Chief Conservator of Forests shall be authorized by proper delegation of powers to re-deploy the department staff who have aptitude and expertise for education and extension works, irrespective of their rank.
 - (iii) nature education packages for primary school

students, secondary school students, under graduate students, post graduate students, senior executives, journalists, members, officers and staff of the Panchayati Raj institutions, legal practitioners, judiciary, police officers and the public should be developed and implemented.

- (iv) sufficient equipment and gadgets such as vehicles, laptops, computers, exhibition materials, projectors; films on wildlife, nature education, important tree species, medicinal plants, raising nurseries etc., shall be made available.
- (v) formulation and implementation of programmes and packages can also be out-sourced to reputed and qualified NGOs or NGIs.
- (vi) services of noted writers, artists, journalists, NGOs, NGIs should be utilized for effective nature education and extension activities.
- (vii) funds allotted under the following budget heads should be made available to this unit:
 - (a) biodiversity conservation
 - (b) Wildlife
 - (c) social forestry
 - (d) Teak Revolving Fund
 - (e) Finance Commission Awards
 - (f) extension and education.

52. Additional financial resources may also be allotted for extension and education activities such as organizing nature camps, exhibitions, seminars and workshops; printing and publishing of books, booklets, poems, brochures and field guides; production of films utilizing the services of NGOs and other experts in the field. (para 4.38)

Strengthening Research Activities

53. The research units should be strengthened by engaging research assistants and research associates on contract in projects for studies in the field, which have direct relevance to management of forests, protected areas and biodiversity conservation. (para 4.40)

54. Officers of Forest Department having aptitude for research shall be posted to research wing with a minimum tenure of five years and they may be made co-investigators in the research programmes funded by the department. (para 4.41)

Development of Skilled Manpower for FMIS and GIS

55. A team consisting of a system administrator and a programmer may be constituted by creating new posts at circle headquarters in order to manage the hardware, to develop and maintain software and to train the ministerial and executive staff in use of computers and software with a view to accelerating computerization and technological advancement. At forest headquarters, apart from a system administrator and a programmer, two posts of GIS programmers and four posts of GIS developers may be created. It would be better to fill up such posts either by deputation from other departments or institutions or by appointment on contract in view of the lack of opportunities for promotion in the Forest Department (para 4.45 & 4.46)

Recruitment of Sports Quota

56. Five sports persons may be specially recruited every year from among the sports persons who represented the state in any sports and games events following the procedure prescribed in the report. (para 4.49)

Special Units for Licensing of Sawmills and Other Wood Based Industrial Units

57. Additional staff as proposed in para 4.50 may be provided by creation of new posts for processing the applications relating to licensing of sawmills and other wood based industrial units. (para 4.50)

Special Powers to Principal Chief Conservator of Forests and Head of Forest Force to Redeploy Staff to Meet Emergencies and to Take Up Duties of Special Nature

58. The Principal Chief Conservator of Forests may be authorized to redeploy the field and office staff temporarily for a period of six months to take up emergency works and to clear pendencies. (para 4.51)

MODERNISATION OF FOREST PROTECTION

Extension of Forest Station System to All Forest Divisions

59. Forest station system may be extended to all the divisions in a phased manner. Wherever isolated bits of reserved or vested forests still exist, section/beat system can be continued for their protection. (para 5.5)

Rationalisation of Staff Strength in Forest Stations

60. The standard staff strength in a forest station may be rationalized following the guidelines stipulated in the report and additional posts required for new forest stations may be created. (para 5.7)
61. The necessity for outposts wherever they function now shall be reviewed by the Chief Conservator of Forests in charge of the territorial and wildlife circles and the result shall be reported for appropriate decision to the Principal Chief Conservator of Forests (Head of Forest Force), who alone shall have the power to sanction outposts. (para 5.8)

Formation of Disaster Management Squads and Crisis Management.

62. Disaster management squads with one Deputy Ranger, one Forester and three Forest Guards may be constituted with headquarters at Kasargode, Sulthan Bathery, Nilambur, Mannarkkad, Chalakkudy, Painavu, Konni, Punalur and Thiruvananthapuram. (para 5.13)
63. These squads may be provided with rapid response kits, vehicles with search lights and equipment such as tranquilizing guns, blowguns, tranquilizing chemicals, rifles, binoculars, digital camera, GPS, metal detector, wireless sets, walkie-talkies, megaphone, signboards for showing danger marks, generator, lighting arrangements, microchip reader, rope, power chain saw, cages, climbing rope and other equipment. (para 5.14)

Delegation of Powers for Disaster Management.

64. Divisional Forest Officers / Wildlife Wardens, Range Officers, Deputy Rangers and Foresters may be delegated with powers

to spend amounts not exceeding Rs.25,000/-, Rs.10,000/-, Rs.5,000/- and Rs.2,000/- respectively for disaster management operations subject to the condition that such expenditure shall be subsequently got approved by the next higher gazetted officer by getting an estimate or memo of cost sanctioned. (para 5.16)

Delegation of Powers for Maintenance of Vehicles

65. Custodian officers of the vehicles may be permitted to incur the cost of ordinary repairs and service in the nearest available workshops to reduce the down time of vehicles and increase efficiency, subject to a limit of Rs.1000/- at a time and annual limit of Rs.6000/-.(para 5.19 & 7.13)

Delegation of Powers to Give Rewards to Informants

66. Range Officers, Deputy Rangers and Foresters in charge of range, stations and sections may be delegated with powers to make payment towards rewards to informants subject to a maximum of Rs.5000/- Rs.2000/- and Rs.1000/- per annum. (para 5.20)

Forest Minister's Relief Fund

67. A Forest Minister's Relief Fund may be constituted which will function in the pattern of a contingency fund, with provision to accept grants and contributions in order to disburse the ex-gratia payments to victims of wildlife attack. A simplified procedure for disbursement of the ex-gratia payments may be adopted as indicated in the report. (para 5.25)

Protection Camps in Highly Problematic Forest Areas

68. Protection camps shall be established with the approval of Principal Chief Conservator of Forests in problematic forest areas with safe camping facilities. (para 5.26)

Ration and First Aid Boxes in Protection Camps

69. Free ration may be provided for the staff and mazdoors deployed to protection camps in the interior forest areas in territorial divisions, sanctuaries and National Parks at the rates indicated in the report. (para 5.27)

Stock of Anti-Venom in Each Division

- 70 Sufficient quantity of anti-venom shall be procured by the Divisional Forest Officer and supplied to the nearest primary health centers, government dispensaries, taluk hospitals and district hospitals. (para 5.29)

Effectiveness of Check Posts

71. The effectiveness of functioning of check posts at the present stations will have to be studied and appropriate action taken to retain or relocate or convert them into mobile units. (para 5.30)

APPLICATION OF MODERN TECHNOLOGY

Video Conferencing Facility

72. The facility for video conferencing may be introduced in offices down to division offices in the first phase. (para 6.3)

GIS for Management and Protection of Forests

73. The National Natural Resources Management System (NNRMS) under Indian Space Research Organisation (ISRO) may be consulted to improve the use of modern techniques of GIS for better and effective management of forests and plantations. (para 6.4)

Detection of Ganja Cultivation Using Remote Sensing

74. A permanent arrangement may be made with Navy or Air Force for an aerial inspection using helicopters at regular intervals in order to detect and destroy ganja cultivation. A system to monitor forest areas for short-listing areas supporting ganja cultivation may be developed using satellite imagery, under the technical guidance of NNRMS under ISRO. (para 6.5)

Fire Monitoring Using GIS

75. Monitoring of forest fires may be done using MODISH software and data may be collected, compiled and analysed for an effective fire management in forest areas. (para 6.6)

Demarcation of Forest Boundaries and Incorporating in GIS

76. A special project to survey the entire forest land under different land use may be formulated and implemented using modern equipment such as total stations, differential GPS and computers with necessary software's. (para 6.9)

Radio Collaring Technique to Manage Man-Animal Conflict

77. Radio collaring technique may be introduced on experimental basis in order to track the habitual crop raiding elephants, in the areas where acute problems of man-animal conflict exist. (para 6.10)

Crisis Management Units

78. Crisis management units with necessary vehicles and other equipment may be established to manage the problems relating to man-animal conflicts. (para 6.11)

Wildlife Census Using Modern Techniques

79. The wildlife census using modern techniques may be organized every year in such a way that separate and distinct landscape units are covered at regular intervals of five years in rotation. (para 6.12)

Wildlife Forensic Facility

80. Periyar tiger reserve may be developed as a learning centre in collaboration with Wildlife Institute of India, Dehradun, for imparting training to wildlife managers at local level on the use of modern techniques in wildlife management. (para 6.13)

Grading and Certification of Seeds

81. It shall be made mandatory that only graded and certified seeds shall be used for production of quality planting materials in the department. (para 6.14)

Permanent Monitoring Plots with Automatic Weather Station

82. Permanent weather stations shall be installed in biodiversity monitoring plots and selected forest stations. (para 6.16)

Website and Web Portal

83. A project may be formulated and implemented using funds from XIII Finance Commission Award or from other sources to enrich and update the website and web portal of the department engaging experts in the field. (para 6.18).

Software Development Needs

84. Systematic data collection shall be arranged at range and division level, so that preparation of monthly accounts, annual accounts, administration reports, forest statistics etc. can be completed in time without any extra effort. A permanent database for captive elephants would enable the authorities and the owners of the elephants to process applications in respect of captive elephants without undue delay. (para 6.19 & 6.20)
85. Permanent documents such as reserve notifications, vested forest notifications, committee reports, lease of forest land, important judgment, important government orders and circulars can be stored, categorized and arranged chronologically as soft copies in the web portal for easy access and retrieval. (para 6.21)
86. A permanent database may be developed and updated periodically in respect of the important aspects indicated in the report. (para 6.22)

Modernization of Library

87. A project for modernizing library may be formulated and implemented in consultation with experts. (para 6.26)

Modernisation of Records Room

88. The records rooms in various offices may be modernized and computerized to ensure safe custody and retrieval of registers, records and files after proper inventorying and cataloging. (para 6.27)

89. All important documents in the records room can be microfilmed or digitized. (para 6.28)
90. The technical support offered by the Department of Archives may be utilized for the scientific arrangement and preservation of documents and files in the records rooms and for devising a proper retrieval system. (para 6.29)

Modernisation of Offices Down to Range Level

91. The offices down to range level may be modernized with computers and communication network. Solar power system may be installed in all the offices in remote forest areas to ensure uninterrupted supply of power enabling smooth transfer of communication. (para 6.30 & 6.34)

Modernization of Forest Museum

92. The forest museum may be modernized and improved engaging experts in the field so that it would become a centre for natural history education. (para 6.35)

INFRASTRUCTURE NEEDS FOR MODERNISING FOREST MANAGEMENT

Roads

93. Important forest roads may be maintained at regular intervals in order to improve mobility of the staff for protection, management of forest and wildlife and for transportation of forest produce. (para 7.4)

Buildings

94. Maintenance of buildings may be undertaken at regular intervals since they are likely to be damaged quickly in forest conditions. (para 7.5)
95. Most expeditious action may be taken to construct residential buildings in forest areas in a phased manner in order to provide free accommodation facility to all the officers posted in the field. (para 7.6)

Delegation of Powers for Repairs and Maintenance of Roads and Buildings

96. Powers for repairs and maintenance of roads and buildings may be delegated to officers in the field as indicated below:
- (i) Range Officers may be given powers to sanction the estimates for the repair works of buildings under their administrative control subject to a ceiling of Rs.25,000/- per building.
 - (ii) Divisional Forest Officers may be authorized to grant increase in labour rates up to 50% and sanction estimates for repairs of buildings and roads in remote forest areas under their jurisdiction.
 - (iii) Range Officers may be authorized to execute the repair and maintenance works of buildings and roads in forest areas using local labour at estimate rates after inviting local quotations. (para 7.7)

Transportation

97. Four wheel drive jeeps may be supplied to all the divisions, ranges and forest stations in territorial and wildlife divisions. Motor cycles may be supplied to flying squad and social forestry ranges (para 7.8 & 7.10)
98. Officers of and above the rank of Assistant Conservator of Forests may be given powers to sanction estimates, execute works and make payments for special repairs of vehicles provided, the works are got done in approved workshops after due inspection and certification by the AEE/EE of Mechanical Engineering division of PWD. (para 7.15)

Replacement of Old and Unserviceable Vehicles

99. In view of the difficult terrain in which the vehicles run in the forest areas, the vehicles should be condemned on completion of 10 years or two lakh kilometers of running, whichever is earlier. (para 7.16)

CONSERVATION OF FORESTS AND WELFARE OF TRIBALS

Implementation of Forest Rights Act

100. An integrated data base of all forest right holders may be developed on GIS platform by giving a suitable digital code to all claimants, so that the forest land held by each tribal family would be permanently demarcated. (para 8.9)

Prevention of Exploitation and Alienation of Tribal Lands

101. All possible steps shall be taken to prevent exploitation and alienation of tribal lands. The officers of the Departments of Tribal Development, Forest, Revenue and Police having jurisdiction over the area shall be authorized to monitor and make report to the authority to take cognizance of the offence under the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989, on the exploitation of tribals and alienation of tribal lands. (para 8.12)

Forest Dwelling Tribals to be the Partners in Forest Management

102. Forest dwelling tribals shall be made partners in forest management and for achieving this goal, the service of vana samrakshana samithis, eco development committees and forest development agencies shall be effectively utilized. (para 8.13)

Providing Employment Opportunities in Forestry Sector

103. Employment opportunities have to be created for tribals in such a way that tribals are paid their wages daily or at least on weekly basis. For this purpose tribals must be preferentially employed for all forestry and wildlife management activities and paid regularly and adequately. (para 8.14)

Shift from Primary to Secondary and Tertiary Sectors

104. Long term strategies and action plans may be formulated and implemented to facilitate shift of forest dwelling tribals from a forest-based subsistence economy to other economic activities in secondary and tertiary sectors for their socio-

economic transformation even when they continue to stay in their forest hamlets. (para 8.15)

Vocational Trainings

105. Vocational training in trades such as fabrication, welding, masonry, carpentry, compost making, fish rearing and floriculture should be provided on priority basis to the right holders and family members. (para 8.16)

Support to Agriculture

106. The cultivating tribals must be provided with all necessary aid and support to get better returns from agriculture. The food gathering nomadic tribal communities have to be gradually persuaded to settle and take up cultivation. Suitable agro-forestry models shall be developed for the tribal communities. (para 8.17)

Storage, Value Addition and Marketing of NWFP

107. Facilities for collecting, storing, processing, value addition and marketing of NWFP shall be developed by the Forest Department utilizing the organizational structure for the JFM activities such as VSSs, EDCs, FDAs and Vanasree society. Forest officers with right aptitude and proper training shall be posted as the secretaries of tribal VSSs/EDCs for a period not less than five years. (para 8.18)

Electrification of Tribal Colonies

108. The benefits under the scheme Rajiv Gandhi Grameen Vidyuthikaran Yojana (RGGVY) shall be extended to all tribal colonies for which suitable programmes shall be formulated and implemented by the KSEB, Tribal Development Department and Forest Department. (para 8.19)

Health Care Facilities

109. Health care facilities of the forest dwelling tribal shall be improved. Health insurance policy and medical reimbursement scheme may be provided to all tribal families. (para 8.20.)

Supply of Ration Materials at Tribal Colonies

110. A workable arrangement may be formulated in consultation with the local officers of Forest, Tribal Development, Panchayat, Civil Supplies and Revenue Departments to ensure that the ration materials and minimum provisions are supplied to each family in the tribal colony in the forests. A small building to be used for storage of NWFP and ration articles can be constructed in every colony using funds either from the Forest Department or from Tribal Development Department. (para 8.21)

Programmes Implemented by Forest Department

111. Possibilities of organic farming, green certification and export of products may be explored and made available to tribal communities taking into consideration, the experience in Periyar tiger reserve. (para 8.22)
112. Schemes for voluntary resettlement of tribals from the core areas of Wayanad wildlife sanctuary may be implemented availing funds from Government of India. Such programmes may be formulated and implemented depending on the availability of funds in other areas also. (para 8.23)
113. Stage I and Stage II clearances for 7693 hectares of vested forest lands have been obtained from the Government of India under Forest (Conservation) Act for the implementation of the rehabilitation scheme for landless tribals, subject to the conditions specified in G.O.I.F.No.8-16/2002/FC dated 21.08.2003. The Hon'ble Supreme Court in its order dated 30.04.2010 in IA No.1137/2004 in Writ Petition (Civil) No.202/95 has permitted the implementation of the project leaving the question of payment of NPV open to be decided after the assignment is made. The implementation of this project has to be expedited. (para 8.25)

Creation of a Separate Cadre of Reserve Watchers for Forest Dwelling Tribes

114. A separate cadre of 600 Reserve Watchers may be created and the posts shall be filled by special recruitment through Kerala Public Service Commission exclusively from forest dwelling tribals. (para 8.26)

Preference to Forest Dwelling Tribes in the Recruitment of Forest Guards

115. In the case of selection process to the posts of Forest Guards, the forest dwelling tribes from the same district may be granted an additional grace mark of 10% for which government may move the Kerala Public Service Commission. (para 8.27)

Settlement Wise Development Plans

116. Settlement wise development plan may be prepared and implemented for each tribal settlement in the forest areas in order to develop and utilize the forest lands granted under FRA to the optimum level of production on sustainable basis. (para 8.28)
117. Overall district and state wise plans have to be prepared after a detailed family wise survey is conducted in each settlement. (para 8.29)

Management Committees for Settlement-Wise Development Plans for Tribal Areas

118. A management committee may be constituted for each tribal settlement within the forest area for the implementation of settlement wise development plan availing funds from the Tribal Development Department. (para 8.30)

Adoption of Tribal Colonies by Senior Officers

119. A system of adoption of tribal colonies by the senior officers of various departments in the district may be formulated and implemented. Such senior officers may be assigned the duties relating to coordination of welfare activities in the tribal colonies. (para 8.31)

MASSIVE PEOPLE'S MOVEMENT FOR TREE FARMING

120. There is enough scope for tree farming in private lands, which is a less labour intensive alternative to labour intensive agriculture. The following strategies and action plans are prescribed to incentivise the people: (para 9.10)

- (i) areas taken up for tree farming should be exempted from the land ceiling limits as per the Kerala Land Reforms Act.
- (ii) forest department with the help of research institutions should develop better quality clones of indigenous species and provide necessary scientific information on tree farming to the farmers.
- (iii) viable agro forestry models shall be developed.
- (iv) loans at low interest rates have to be made available to the farmers.
- (v) subsidy may be granted to the long-term investments in tree farming as in the case of rubber cultivation.
- (vi) the income derived from tree farming shall be exempted from income tax.
- (vii) permanent institutional arrangement to give effective guidance and information to the farmers shall be established using the services of the existing extension units of Forest Department and the proposed social forestry units at block panchayat level.
- (viii) formation of tree farmers co-operative societies should be facilitated to organize the farmers to take care of their interest and to avoid exploitation by middlemen.
- (ix) all necessary and sufficient information for raising nursery, planting, cultural operations, marketing etc. shall be made available on the website of the department.
- (x) the department should supply quality seeds and seedlings on a no profit no loss basis.
- (xi) the tree growers should be allowed to sell their products anywhere at their choice within or outside the state.
- (xii) NABARD may be approached for providing long term loans on priority basis for taking up tree farming.
- (xiii) the scope for obtaining carbon credit for tree farming by farmers can be worked out.
- (xiv) multi-sectoral linkages with stakeholders, farmers,

wood based industries, financial institutions, government agencies, NGOs and media should be established.

- (xv) massive awareness programmes through Panchayats, NGOs, education institutions and media should be organized.

POLICY AND LEGAL ISSUES

Ownership of Trees Grown by the Occupants of Forest Areas under Pattayams Issued by Revenue Authorities

- 121. Government may take a policy decision relating to the disposal of trees in the non-revertible forest lands assigned under schemes such as grow more food, arable forest lands, settlement of ex-service men and regularization of pre 01.01.1977 encroachments. Amendments to the relevant rules may be made. (para 10.7)

Revision of Forest Code

- 122. The process of approval of revised Forest Code may be expedited. (para 10.8)

Conservation of CHR Areas

- 123. Government may take a policy decision to stop the present dual control system in Cardamom Hill Reserve areas. (para 10.9)

Reservation of Unreserved Forests and POB Lands

- 124. Urgent action may be taken to notify the unreserved forest lands and POB lands as Reserved Forests. (para 10.10)

Conduct of Cases in Magistrate Court, Sub Courts, District Courts and High Court

- 125. A legal assistant may be provided to the offices mentioned in para 4.48 of the report for speedy disposal of cases. A small group of lawyers who have expertise, experience and commitment to the cause of conservation of biodiversity and environment may be empanelled in each district (Green Panel of Advocates) and the Divisional Forest Officers may be empowered to engage an advocate from the panel for conducting forest cases. (para 4.48 & 10.11)

Conducting Criminal Cases Registered by Police Against Forest Officers for Their *Bona fide* Actions during the Performance of Duties.

126. In the event of opening fire using official fire arms during the course of performance of duty, resulting in death of or injury to any forest offender, the forest officers shall not be arrested and prosecuted without a magisterial enquiry by the Revenue Divisional Officer having jurisdiction over the area. (para 10.12)

Prevention of Performance of Duty of Forest Officers to be Made an Offence under The Kerala Forest Act

127. Necessary amendment to the Kerala Forest Act may be effected to make the prevention of performance of duties of forest officers by forest offenders and other miscreants, a forest offence under Kerala Forest Act itself as in the case of enactments relating to excise and customs. (para 10.13)

Delegation of Powers to the Committee of Chief Conservators of Forests

128. The duties and functions of the committee of Chief Conservators of Forests may be stipulated specifically and necessary delegation of powers may be granted to the said committee as indicated in the report. (para 11.2)

Delegation of Powers to the Officers of and above the Rank of Conservator of Forests to Sell Sandalwood and Teak Trees for Religious Purposes to Individuals or Religious Institutions.

129. Officers of and above the rank of Conservator of Forests may be delegated powers to sell sandalwood and teak timber/trees to religious institutions and individuals subject to the conditions and procedures indicated in the report. (para 11.3)

Realising Loss from Officers in charge of the Station / Section for the Loss of Forest Produce from Their Jurisdiction

130. The Conservator of Forests or Chief Conservator of Forests in charge of the circle may be authorized to absolve the subordinate officers in charge of beat / section / station from their liabilities to make good the loss sustained by government on account of pilferage or the theft of forest produce, if it is convinced that the pilferage or theft of the forest produce has taken place in spite of the due diligence on the part of the subordinate forest officers. (para 11.5)

Cheque Drawing Powers for Senior Superintendent / Administrative Assistant / Senior Administrative Assistant.

131. Senior Superintendents, Administrative Assistants and Senior Administrative Assistants, who are functioning as ministerial heads in various offices may be delegated with powers to draw cheques for the expenditure in respect of bills passed by Divisional Forest Officer / Conservator of Forests / Chief Conservator of Forests as the case may be to meet expenditure for works, purchases, pay and allowances etc. (para 11.6)

Introduction of Contract System for Planting and Maintenance Operations

132. Contract system may be introduced on experimental basis in lieu of convenor system for undertaking planting operations, thinning operations, timber working and such other works. (para 11.8)

Crop Damage by Wild Animals to be Treated as Natural Calamity

133. The crop damage by wild animals may also be treated as a natural calamity, which would entitle the farmer for financial assistance from the National Natural Calamity Relief Fund. (para 11.9)

Release of Funds under Centrally Sponsored Schemes.

134. The state government may release the entire state share of the centrally sponsored schemes during the first and second quarter of the financial year itself for executing works in time during the appropriate season. (para 11.10)

Eviction of Post 01.01.1977 Encroachments

135. Most expeditious action has to be taken to evict post 01.01.1977 encroachments and to implement schemes for eco restoration in such evicted areas under National Afforestation Programme (NAP) adopting the strategy of joint forest management (JFM). (Para 11.11)

Strengthening of Vigilance Wing

136. The Government may sanction the proposal already submitted to strengthen and reorganize the Vigilance Wing. (para 11.12)

Delegation of Powers to Range Officers

137. The Forest Range Officers may be delegated with the following powers for their effective functioning:
- (i) to sanction estimates for amounts up to Rs.5,000/- for ganja raids
 - (ii) to sanction estimates for amounts up to Rs.5,000/- for working down thondy
 - (iii) to incur expenses for minor repairs and maintenance of vehicles up to Rs.1000/- at a time subject to an annual ceiling of Rs.6,000/-
 - (iv) to incur expenses for repairs and maintenance of computers and peripherals, purchase of stationery and office expenses up to Rs.1,000/- at a time subject to the annual ceiling of Rs.6,000/-
 - (v) to incur expenses towards the cost of fuel, lubricants, servicing, tyre, battery etc. subject to estimate sanctioned for the annual maintenance of the vehicle. (para 5.19, 7.13, 11.13)

Increase in Budgetary Allocation to Forestry Sector

138. The plan outlay for the forestry sector in Kerala may be enhanced to at least 2.5% of the total plan outlay of the state. (para 12.2)

PROCEEDINGS OF THE COMMITTEE

1. Government of Kerala vide GO (MS) No.22/2010/F&WLD dated 21.5.2010 constituted an expert committee for making recommendations for the modernization of the Forest Department of Kerala (**Annexure 1**). Following is the composition of the committee: -

1	Shri.T.M. Manoharan	Principal Chief Conservator of Forests and Head of Forest Force, Kerala Forest Department	Chairman
2	Dr. C.K. Sreedharan	Principal Chief Conservator of Forests (Rtd.), Tamil Nadu Forest Department	Member
3	Prof. E. Kunhikrishnan	Dept of Zoology, University College, Thiruvananthapuram	Member
4	Shri. N. Gopinathan	Chief Conservator of Forests (Vigilance), Kerala Forest Department	Member- Convenor

2. The committee was asked to give recommendation on the following:

- (a) Areas of modernization of forest protection staff in terms of mobility, communication and equipment.
- (b) Application of modern technology for efficient forest protection and management.
- (c) Infrastructure needs of a modern forest force for their effective functioning.
- (d) Human resource requirement / management and reorienting their skills to the changing imperatives of environment issues.
- (e) Redefining/reorientation of the mandate of KFD to meet the changing role in view of climate change issues.
- (f) Any other issue that the committee may deem essential to achieve the above objectives.

3. As part of formulating the recommendations, the committee decided to study the various reports and recommendations of other committees, agencies and department, which are relevant to the subject matter. Since the subjects of forests and environment are issues on which there is intense public debate and public concern, the Committee decided that there should be wide consultation with various interest groups.
4. The committee had conducted its meetings on 06.11.2010, 07.11.2010, 09.01.2011, 29.01.2011, 30.01.2011, 19.04.2011 and 20.04.2011 before finalising the report.
5. As per the Committee's initial decision to elicit opinion and suggestions of various stakeholders such as academicians, environmentalists, members of the public, officials, employees unions etc. the committee interacted with the following stakeholders and recorded their opinions and suggestions.
 - (i) The representatives of the Kerala Forest Drivers Association, Kerala Forest Protective Staff Association, Kerala Forest Rangers Association, Gazetted Forest Officers Association, Kerala, and Indian Forest Service Association, Kerala Chapter presented their views before the Committee on 31.07.2010 at Ernakulam. Summary of views expressed with list of participants is enclosed as ***Annexure-2.***
 - (ii) The representatives of the Kerala NGO Union, Kerala NGO Association, Joint Council, Kerala Government Gazetted Officers Association and Kerala Forest Ministerial Staff Union on 28.08.2010 at Thiruvananthapuram. Summary of views expressed with list of participants is enclosed as ***Annexure-3.***
6. The committee held discussions with the Chief Conservators of Forests on 09.09.2010 and the views of the officers were sought through a questionnaire which has been responded to by most of the officers. Questionnaire is enclosed as ***Annexure-4***
7. The subject was also introduced in the workshop on Research Activities held on 13.09.2010 in Kerala Forest Research Institute, Peechi at the instance of the Kerala State Council for Science Technology and Environment. The questionnaire (***Annexure-4***) was circulated to Kerala Forest Research Institute (KFRI), Tropical Botanic Garden and Research Institute (TBGRI), Centre

- for Water Resource Development and Management (CWRDM), Centre for Earth Sciences Studies (CESS), Institute of Forest Genetics and Tree Breeding (IFGTB) and Kerala Agricultural University (KAU).
8. A Request was made through newspapers and the website of Kerala Forest Department to the public to offer their views and suggestions on the issue (Copy enclosed as **Annexure –5**).
 9. On 30.09.2010, a conference of Senior Officers was exclusively held at Thiruvananthapuram in which the various Conservators/Chief Conservators of Forests made presentation on their views/suggestions which have been recorded.
 10. On 06.10.2010, twenty seven IFS Officers of and above the rank of Conservator of Forests on deputation were addressed through the questionnaire (**Annexure-4**) to make available their suggestions/recommendations. The views expressed by the officers of the Forest Department as well as those on deputation are summarised and given in **Annexure -6**.
 11. Various individuals, NGOs, NGIs responded to the request made in the newspapers. The suggestions/views expressed by the public are summarized and given in **Annexure –7**.
 12. On 10.11.2010 the Committee members interacted with selected individual officers from the category of forest protective staff who have been awarded Chief Minister's Forest Medal and also members of the ministerial staff of the Forest Department in Thiruvananthapuram. The summary of their opinions is given in **Annexure-8**.
 13. On 20.11.2010 a workshop was organised in Thiruvananthapuram for various NGOs, institutions, Officers from Forest Department and other departments and for the representatives of vana samrakshana samithis (VSSs) and eco development committees (EDCs). Copy of the proceedings is enclosed as **Annexure-9**.
 14. The gist of recommendations of various groups has been compiled and given in **Annexure-10**.
 15. Many documents and reports relevant to the topic have also been examined, of which the important ones are: -

- (i) Report of the Forest Policy and Management in Kerala- Recommendations of the High Level Expert Committee – Orders – 1987 **Annexure-11**.
- (ii) Report of the Committee on Prevention of Illegal Trade in Wildlife and Wildlife Products 1994. (Subramaniom Committee Report)
- (iii) National Forest Policy 1988
- (iv) Kerala State Forest Policy 2009
- (v) Report of the Centre for Organization Development, Hyderabad on Sector Institutional Study to enhance KFD capacity 2001 – extracts - **Annexure-12**.
- (vi) Report of the National Forest Commission 2006 – extracts - **Annexure-13**.
- (vii) Kerala Forest Code (Volume I to IV).
- (viii) Report of the Commission appointed by Government of Tamil Nadu for the modernization of Tamil Nadu Forest Department.
- (ix) Human Resource Management Practices of Kerala Forest Department: A Participatory Appraisal- P.K. Kesvan IFS.
- (x) Modernization of Wildlife Protection – A report by Ministry of Environment & Forests, Government of India.
- (xi) 50 years of Forests and People – Proceedings of seminar dated 25.04.2007 in connection with 50th Anniversary of Kerala Government.

MODERNISATION IN KERALA FOREST DEPARTMENT

CHAPTER-I

INTRODUCTION

- 1.1 Kerala is justly renowned for its rich and diverse natural resources. This narrow strip of land with a length of about 600 km and average width of 65 km and altitudinal variations from 2m below MSL at Kuttanad to 2694 m above MSL at Anamudi, remains green all through the year due to its topography and high annual rainfall which averages to 3000mm. Out of the 44 rivers originating from the Western Ghats and the midland hills, 41 rivers flowing westwards drain the water through estuaries and backwaters to the Arabian Sea. The evergreen, semi evergreen and moist deciduous forests as well as grasslands of the Western Ghats, and the rivers, estuaries, backwaters and wetlands provide a large variety of habitats for the rich and unique biodiversity wealth of the state.
- 1.2 Till the beginning of nineteenth century, the forests did not attract much attention of the people or administrators. Madras Forest Act 1882, Travancore Forest Act 1887 and Cochin Forest Act 1905 marked the changes in the attitudes and approaches of the administrators towards the forests in the erstwhile Malabar, Travancore and Cochin areas respectively. Reservation of forests under these enactments was more for commercial purposes than for conservation reasons. The objectives of management were more focused on increasing revenue by extraction of timber from natural forest and by production of more valuable timber like teak in plantations. The forest areas were managed in accordance with the prescriptions of working plans approved by government for a period of ten years. Most of the working plans so formulated for the management of forests contained prescriptions mainly relating to selection felling, clear felling and raising of plantations of commercially valuable timber species.
- 1.3 With the United Nations Conference on Human Environment at Stockholm in 1972, the forest management all over the world started undergoing far-reaching changes. There have been perceptible changes in the policy for management of forests in India. Both in National Forest Policy 1988 and in

Kerala Forest Policy 2009, the emphasis is more on conservation of biodiversity for optimization of ecological services and using the strategy of Joint Forest Management for the improvement of means of livelihood of forest dwelling and other forest dependent communities. Today in the context of our State, clean water is regarded as the most important produce from forests.

1.4 The changes in forest policies have naturally led to change in priorities in management of forests in Kerala. Now the thrust of forest management is more on ecological services and biodiversity conservation than on timber production. Society, by and large, is becoming more and more conscious about the importance of clean air, clean water and clean environment for healthy living. The Western Ghats has been declared a biodiversity hotspot and India is being considered a mega biodiversity country. As early as from 1983, Government of Kerala had stopped clear felling in natural forests for raising plantations. Selection felling in natural forests has also been discontinued from 1987, collection of non wood forest produce (NWFP) was exclusively earmarked for tribals and other poor forest dependent communities and the marketing of NWFP was regulated through Tribal Co-operative Societies and their apex body namely the Kerala State Federation of Scheduled Castes and Scheduled Tribes Development Cooperatives Ltd. Presently the lion's share of the timber needs of the State is met by timber from homesteads and rubber plantations. Part of the requirement for timber is met by import as well. Thus there is an increasing tendency to manage and conserve forests for their ecological services and biodiversity values. Consequently more and more forest areas are being brought under protected area network, which as on date, consists of five National Parks, two tiger reserves, fifteen wildlife sanctuaries and one community reserve.

1.5 Forests which were only of local concern have now become natural resources of national and international concern. In Para 4.3.1 of National Forest Policy, 1988 it has been stated as follows.

....tropical rain/moist forests, particularly in areas like Arunachal Pradesh, Kerala, Andaman and Nicobar Islands, should be totally safeguarded.

1.6 Global warming and climate change as well as depletion of biodiversity are now global concerns for which the remedy lies

only in concerted local action. Increasing tree cover and thereby increasing sequestration of carbon have become urgent responsibilities of every Government, at national, state or panchayat level. Further, our nation is a signatory to the Convention on Biological Diversity (CBD). United Nations has come out with the slogan 'Your Planet Needs You, Unite to Combat Climate Change'. United Nations Environment Programme (UNEP) has launched a massive planting programme, "Plant for the Planet – Billion Tree Programme". Thus it has become imperative that every bit of greenery is conserved and every bit of wasteland is covered with trees. In order to ensure water security, food security, energy security, health security and clean air and environment, the tree cover and biodiversity have to be enriched. Prime Minister's council on climate change has included Green India Mission as one of the eight national missions under National Action Plan on Climate Change (NAPCC). This mission is aimed at increasing the quality and quantity of India's forest cover by 10 million hectares over the next ten years. The mission will focus on improvement of ecosystem services, including biodiversity while also boosting forest based livelihood. Thus there have been social, political, legal, economic and scientific changes, which will have far reaching impact on forests and biodiversity conservation in the coming years.

- 1.7 The 42nd amendment of the Constitution of India has made the conservation of forests and wildlife one of the Directive Principles of State Policy. Article 48 A of the Constitution of India states that the State shall endeavour to protect and improve the environment and to safeguard forests and wildlife of the country. To protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures has been made a fundamental duty of the citizen under Article 51 A(g) of the Constitution of India. Increasing tree cover through Social Forestry activities has been included in the list of duties and functions of Panchayati Raj Institutions as per the provisions of Panchayati Raj Act 1994.
- 1.8 The Judiciary has started spearheading conservation of natural resources. Through a series of landmark judgments, as in Godavarman case (Writ Petition 202/1995) and M.C Mehta case, the Hon'ble Supreme Court of India has established the applicability of public trust doctrine in the

domain of natural resource conservation. The Hon'ble High Court of Kerala has also passed several judgments reiterating the public trust doctrine and emphasizing the constitutional responsibility of the State and citizens with regard to conservation of forests, wildlife and other natural resources. Now it is a well established law of the country that natural resources such as forest, rivers and lakes are public trusts, which have to be maintained under public ownership and managed for the common good of society.

- 1.9 High biodiversity value areas have been selected for special management as per project approved by Government of India. Western Ghats is a candidate for World Natural Heritage site. Thus the forest management in the state, which was only a local concern, has now become a national and international concern. All the forests in the whole of the state are managed as per working plans for forest divisions and management plans for protected areas, which are prepared in accordance with the guidelines issued by Government of India. Working plans have to be approved by Government of India and management plans for sanctuaries and National Parks have to be approved by Chief Wildlife Warden and Government of India.
- 1.10 Joint forest management (JFM) has been approved as the strategy to improve conservation of forests and the biodiversity therein. In January 1998 the state government approved the system of JFM and issued detailed operational guidelines. The strategy is to involve forest dwelling and other forest dependent communities in forestry activities in a symbiotic mode. For the services rendered by the local people, the benefits from the forests will be shared with them. Financial assistance for entry point activities is also provided to the local communities. Vana samrakshna samithies (VSS) and ecodevelopment committees (EDC) have been constituted and they have been federated into forest development agencies (FDAs) at division level. State Forest Development Agency (SFDA) has been constituted as the apex body at state level. Necessary rules, regulations and guidelines have been issued to regulate the functions of VSS, EDC, FDA and SFDA. Thus there has also been a perceptible change in the institutional mechanism for forest conservation.
- 1.11 In view of the policies relating to conservation of natural forests, and constraints for land for tree farming or

afforestation, the increasing demand for timber will have to be met partly by increasing productivity of forest plantations and partly by increasing timber production from non forest areas. There has been no effective and economical substitute for pulp and paper so far. Therefore increasing demand for pulpwood should also have to be satisfied.

1.12 It has been assessed that approximately 75% of Ayurveda medicines, 90% of Homeo medicines and 50% each of Unani and Siddha medicines are of plant origin. A large number of medicines used in modern medicine are also of plant origin. The local health traditions, all over the world also depend mainly on medicines of plant origin. Manufacture of medicines of Ayurveda and other Indian systems of medicine is a flourishing industry. They face acute shortage of genuine raw materials. If the medicinal plants and their habitats are not properly conserved, many of them would face the threat of extinction. The Western Ghats being a store house of rare and endangered medicinal plants, an extremely careful approach is essential for their conservation and sustainable use.

1.13 Implementation of Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 (hereinafter referred to as Forest Rights Act) has added a special dimension to the future management of forests. Forests Rights Act mainly recognizes the following rights as far as the tribes in Kerala are concerned:

- (i) right to possession, enjoyment and inheritance of land possessed by Scheduled Tribes and traditional forest dwellers as on 13.12.2005.
- (ii) community right over NWFP, the definition of which states that NWFP would include all non timber produce of plant origin including bamboo, brush wood, stumps, cane, tussar, cocoons, honey, wax, lac, tendu or kendu leaves, medicinal plants and herbs, roots, tubers and the like.
- (iii) right over one hectare of forest land for common utilities such as schools, dispensary or hospital, anganwadis, fair price shops, electric and telecommunication lines, tanks and other minor water bodies, drinking water supply and water pipe lines, water or rain water harvesting structures,

minor irrigation canals, non conventional source of energy, skill upgradation or vocational training centres, roads and community centres.

- 1.14 Right to NWFP has been granted as a legal entitlement to tribals, who can collect, use or sell them. No restriction is imposed in respect of rare, endangered and threatened (RET) species. Though section 5 of the Forest Rights Act states that it is the duty of the holders of any forest rights, grama sabha and village level institutions to protect the wildlife, forest and biodiversity, the methods and mechanisms for implementing this stipulation have not been spelt out. Hence it would be a challenging task for the forest managers to implement the Forest Rights Act and to assist the tribals to manage the forests and NWFP sustainably, especially in the present times when exploitation of tribals and bio-piracy are not uncommon.
- 1.15 Kerala tourism is booming due to the scenic beauty of the state, which is a blend of forests, backwaters and beaches. The influx of tourists to forest areas is increasing exponentially. Therefore a cautious approach to regulate eco-tourism by limiting it to minimum areas with a view to minimizing the adverse impact on forests and to increase the element of nature education has to be adopted in this regard.
- 1.16 Forestry had been an activity confined to forest areas in the past. Now forestry is no longer confined to forest areas. Kerala has been spearheading conservation activities through her imaginative programmes such as 'Ente Maram' (My Tree) for school children, 'Nammude Maram' (Our Tree) for college students, 'Vazhiyorthanal' (Shade Along Way Sides) for trade unions, 'Haritha Theeram' (Green Coastal Line) and 'Haritha Keralam' (Green Kerala). There are many ecologically sensitive areas such as tracts of mangroves and bits of sacred groves dispersed amidst the coastal and other inhabited areas in the state. Government of Kerala have initiated projects to incentivise those who conserve mangroves and sacred groves. Urban forestry practices will also have to be started in view of the rapid urbanization in the state.
- 1.17 Man-animal conflict is on the increase. Human deaths and injury as well as crop destruction by wild animals have invited the wrath of the people against wildlife and forest officers. Urgent measures are required to prevent this menace and to minimize damage to human life and agricultural crops.

Emergency rescue operations are also necessary both for wildlife and for human beings when they are entrapped in accidents or in natural calamities.

- 1.18 Though forestry sector is facing multitudes of social, economic and scientific problems, the research input in this sector is very poor in terms of quality and quantity. Therefore input to this sector in terms of finances and qualified human resources has to be increased.
- 1.19 Trained manpower is in acute shortage in forestry sector and forest resource management. Therefore timely induction and in-service training are to be introduced and improved.
- 1.20 The importance of biodiversity and genetic resources is being increasingly studied and understood, especially in view of genetically modified varieties of agricultural and cash crops. More scientific and technological inputs are required to improve the conservation of genetic resources. Hence, strategies and plans are required to increase input in terms of expertise and expenditure to the field of applied research for conservation of biodiversity and judicious use of genetic resources.
- 1.21 Advancements in the fields of computerization for storage and processing of data, communication, project formulation, project implementation, project monitoring and for improving protection and management of natural resources have not been fully made use of by the department. An ambitious beginning had been made by the Forest Department through the World Bank aided Kerala Forestry Project implemented during 1998–2003. For computerization and allied programmes, apart from hardware and software, trained manpower is essential. Geographic Information System (GIS) is also being used extensively in natural resource management in developed countries. GIS is effectively used for identification and quantification of different types of natural forests, degraded forests and plantations, preparation of projects for their management and for monitoring of implementation of such projects etc. Survey of boundaries of forests can be effectively done in a time bound manner using equipment such as differential geographic positioning system (GPS), total station and computers. e-Governance can also be introduced for financial management and human resource management. Government of Kerala have already computerized treasury transactions and introduced the

software called 'SPARK' for regulating establishment expenditure. Therefore, there is an urgent need for the department to prepare itself to adapt to and internalize such changes.

- 1.22 Agriculture, except that of cash crops such as rubber, cardamom, coffee and tea, is gradually becoming uneconomic, especially due to non-availability of local labour and prohibitively high labour cost. The people are likely to turn to tree farming adopting mechanized methods, which is less labour intensive. Suitable agro forestry models will also have to be developed to meet such future demands. The department will also be compelled to adopt mechanization in plantation forestry. A cautious and planned change in this direction would be absolutely necessary in the near future.
- 1.23 Large extents of Reserved Forest lands had been leased out in the past by the erstwhile Rajas of Cochin and Travancore. In accordance with the provisions of Forest (Conservation) Act, 1980, renewal of lease requires permission from Government of India. There are allegations to the effect that many lessees had encroached into neighbouring forest areas and have in their possession more lands than what were leased out to them. The present policy of government is to resume possession of the forest lands under lease on expiry of lease period. A proper and accurate inventory of such areas has to be prepared and advance action taken for the resumption and management of Reserved Forest areas under lease.
- 1.24 Right to Information Act, 2005 has been implemented by Government with a view to ensuring transparency and accountability. This has considerably increased the workload in all the offices in Kerala Forest Department as is happening in all government offices. The department has published a Citizens' Charter in 2009. The department is also enriching its website and web portal by adding more and more information though there is still ample scope for improvement. Institution of a modern library and modern system of maintenance of old records with computerized inventories has assumed larger importance in this context.
- 1.25 Forests constitute a precious gift of nature to all living beings and particularly to mankind. They are formed as a result of the interplay of various living and non living entities over millions of years. Forests constitute a national asset and a life

supporting system, which play a vital role in the ecological security of the region. Different user groups such as farmers, graziers, miners, engineers, planners and administrators prefer different uses of forestland according to their own perception and therefore demand that forest be set apart exclusively for certain specific uses as preferred by them. Still others prefer forest areas to be fully conserved as protected areas to conserve biodiversity or as catchment areas of our streams and rivers or as carbon sinks. Tribals and other forest dwellers like to use forests to meet their livelihood needs. The needs of various interest groups are often found to be in conflict with one another.

- 1.26 Degradation of forests due to various reasons is a serious threat to conservation. This committee constituted by Government of Kerala as per G.O.(MS) No. 22/2010/F&WLD dated 21.05.2010 has looked into and analyzed the various objectives, needs, problems, issues and challenges the forest sector in Kerala is confronted with. The policy, practices and impact of forest management on the people and other constituents were also studied. National Forest Policy, 1988 and the Kerala State Forest Policy 2009 are the guiding principles to determine the objectives and priorities of the use of forests in Kerala taking all the national and local interests into consideration. Forest Policy of 1894 of British India laid down public benefit as the sole objective of management of public forests. It aimed at realization of maximum revenue as the guiding principle. The National Forest Policy of 1952 emphasized sustainable timber production to meet the increasing demand of defence, communication and industrial development. The National Forest Policy of 1988 marked a major departure from 1952 forest policy as it laid emphasis on maintenance of environmental stability and meeting the needs of the local people ensuring their participation in protection and management thereof. It is essential for us to understand that the forest and societies are in a constant flux in the ever changing development priorities and scenarios in the country. Hence the main objectives of forest policy and consequently of forest management have not remained static but have changed over time to suit the aspirations of the people. The National Forest policy 1988 and the Kerala State Forest Policy 2009 with a well balanced approach to conservation and use of forests are found to be producing desired results.

1.27 This Committee has examined the multitude of problems facing forestry and biodiversity sectors in Kerala, taking into consideration the various limiting factors in the present social, political, demographic and economic scenario. The Committee has made an earnest attempt to incorporate recommendations for improving transparency, accountability, professionalism and efficiency of the Forest Department taking into consideration the limited financial resources available.

CHAPTER II

HISTORY OF FOREST MANAGEMENT IN KERALA AN OVERVIEW

- 2.1 From time immemorial, the forests of Kerala were renowned for their spices, medicinal plants and ivory. Romans, Arabs and other foreigners were attracted to this small speck of land at the tip of the Indian peninsula, only for procuring such produce. There are evidences in history indicating that trade links existed between the local chieftains in Kerala and traders from various parts of the World. There is little evidence in history to show that forests were scientifically and consciously managed till the end of 18th Century. Three-fourths of the land area of Kerala was under thick forest cover even up to the 18th Century. In the beginning of the 19th century, the land area in the present state of Kerala remained divided into three regions, namely Malabar, Cochin and Travancore. The fate of forests in all these three regions was largely influenced by the commercial interests of rulers. In those days, when the state had only limited resources for generation of revenue, the rulers had utilized the largely untapped wealth that remained inaccessible and unexploited in the forests as a major source. The need of the day was to generate as much revenue as possible to drive their administration. Even while sharing many common features, the forest areas in the state were subjected to different rules, namely British rule in Malabar and rule of the Kings in Cochin and Travancore. So the forests in these regions have different histories to tell.

In Malabar

- 2.2 Malabar came under British Rule after the fall of Tippu Sultan in 1799. Large tracts of forests in Malabar were then in private custody and ownership. The British proclamations reserved only some forest tracts. Their management prescriptions were largely oriented towards conversion of the natural forests to teak plantations. Raising of teak plantations was tried as early as in 1843 at Nilambur by Shri.Chathu Menon, the then Sub-Conservator and Mr. H.V. Connolly, the then Collector of Malabar. Major General Morgan who supervised the construction of the army barracks for British army in Wellington in Ooty came to Wayanad in 1857 to cut

the required teak from the forests there. In the year 1860 Major General Morgan shifted to Nilambur to supervise the establishment of teak plantations in the catchment of Chaliyar.

- 2.3 Similar changes had occurred in the Anamalais also. The establishment of teak plantations was started in the Parambikulam area under the supervision of the colonial officers during the same period. A road was opened to Top Slip – Parambikulam forest from Pollachi for the exploitation of the forest in this area. A very huge quantity of timber was transported using the tramway, which was built from Chalakkudy to Parambikulam between 1901 and 1905.
- 2.4 The Madras Forest Act came into force in 1882, which initiated the legal process of reservation of forests. The forests of Karimpuzha, New Amarambalam, Silent Valley, Walayar and Palakkad were declared to be Reserved Forests during the period from 1883 to 1907. More areas were also declared Reserved Forests later. In 1886 Maj. Campbell, the then Conservator of Forests had suggested that teak planting might be continued. Mahogany was also identified to be a suitable tree species in the tropics of the Western Ghats and commercial plantations were raised in Nilambur. The first working plan for Nilambur division (1896 – 1905) was prepared in 1894. This indicates that management of forests regulated and guided by working plans started in the Malabar area long before such practice was started in Travancore and Cochin.
- 2.5 There were large tracts of private forests under the ownership and possession of individuals, families and local chieftains in the Malabar area, despite the reservation done under the Madras Forest Act, 1882. These private forests were over-exploited and mismanaged during early 1900s. A lot of people from Central Travancore began to colonize the private forests in Malabar and large areas of private forests were brought under cultivation after destroying the forest cover. Consequently, the Madras Preservation of Private Forest Act, 1949 was enacted by which all private forests exceeding 40 ha in extent came under the purview of the said Act. The provisions of the said Act were intended to bring in regulations on transactions and clearance of private forest areas by insisting on obtaining permission from the District Collector. The destruction of private forests continued with and without permission of the Collector and hence the Madras

Preservation of Private Forest Act, 1949 did not yield the desired result.

In Travancore

2.6 In the State of Travancore, all the forests were considered government property. In 1820, the Government of Travancore started exploiting timber directly and a timber depot was set up at Alapuzha. Captain Robert Gordon, the commercial agent of British rule was also holding charge as the Conservator of Forests. His duty was to collect and make available timber and cardamom from forest areas for shipment to Great Britain. The British had shown prime interest in the High Ranges (the present Munnar area) and the area south to it up to Kumili and Periyar. The forest tract from Peermedu-Kumili to the High Ranges has been considered cardamom rich area by the Britishers. Mr.U.V. Munroe was appointed the first Conservator of Forests in Travancore. The main task of the Conservator was to organize collection of cardamom and other spices from the forest area with a view to monopolising the trade. The Travancore Forest Act came into force in 1887. The proclamation of the 'Cardamom Hill Reserve' was published in the Travancore Gazette in 1897. As per the proclamation, 215720 acres of forest land was declared as Cardamom Hill Reserve (CHR). After the proclamation of the CHR, the conversion of the natural forest to cardamom plantations in the cardamom hills became more organized. Large areas from the catchment of the Periyar river were given on lease to those who were willing to raise cardamom plantation in this area. Forest areas suitable for cardamom cultivation were leased out from 1905 and the Cardamom Rules were notified in 1935 for regulating the leases of forest areas for cardamom cultivation.

2.7 Another phase of conversion of huge tracts of shola-grasslands in the High Ranges was commenced after the agreement signed between Mr. John Daniel Munroe and the Punjar Raja in 1877. As per the agreement Mr. J. D. Munroe got the right to cultivate 137424 acres of land which was later established as the Kannan Devan Hills village. Large areas of shola forests were cleared and converted into tea plantations in Munnar and surroundings. About 100 sq.km of sholas and grasslands in the Hamilton Plateau, Eravikulam, Turners Valley and Kattumala – Poovar region were not tampered with

and the Britishers were nurturing this area as a game reserve especially for hunting Nilgiri tahr. This area was later declared Eravikulam National Park after the resumption of land by the government from the Kannan Devan Company under the terms of The Kannan Devan Hills (Resumption of Lands) Act, 1971. Large scale conversion of forest land for agriculture and cash crops had started in Peermedu area also with the establishment of tea and coffee plantations in the hill areas.

2.8 Mr. J.S. Vemela was appointed as Asst. Conservator of Forests, Malayattoor in 1865. During this period Sir T. Madhava Rao, the Diwan of the King 'Ayilyam Thirunal' had taken the initiative to raise a teak plantation in Travancore. Konni was declared to be the first Reserved Forest on 9th October, 1888. More areas were declared as Reserved Forests in 1889. Mr. Bourdillon was appointed the Conservator of Forests in 1891. He is considered as the pioneer forester in Travancore. Large scale planting of teak was started during his period. Mr. Bourdillon developed a successful technique of stump planting to raise teak. In 1893 a detailed Forest Act was passed and in 1894, rules were framed based on the Act. In 1896, the Forest Department was totally re-organised on the lines of the British Forest Administration and the state was divided into divisions and ranges. More divisions were formed in 1913. Plantation forestry was started in a systematic manner in the 1940s on the basis of carefully prepared working plans. The first working plan for Quilon, for the period from 1944 to 1958 was prepared for planting teak. Forest administration also was streamlined by the preparation of a Forest Manual. The Forest Manual (1st Part) was published by Sri. Narayana Iyengar in 1933. The second part was published by Sri L.A. Krishna Iyer in 1947. The need for conserving the wildlife wealth was felt only during the 1930's. Mr. S.C.H. Robinson was appointed the first Game Warden in 1933 for the protection of wildlife. The Periyar Lake Reserve was declared to be Nellikkampetty game sanctuary. This was later declared the Periyar wildlife sanctuary and subsequently the Periyar tiger reserve.

2.9 The Cardamom Hill Reserve which forms the major catchment of the Periyar river has highly complex issues. The entire 857 sq.km of CHR is Reserved Forest by legal status. The land in CHR was being given liberally for cardamom cultivation. The practice was being continued in accordance with the

provisions in the Cardamom Rules 1935. The land on lease can be utilized only for the cultivation of cardamom. The land cannot be alienated, but can only be inherited. The area is under dual management wherein the custody of the land is with the Revenue Department and the responsibility of protection of the trees is with the Forest Department. Trees cannot be cut and removed without the prior approval from the concerned forest officer. Rules to that effect for leasing the forest land for cultivation of cardamom were formulated again in 1961. There are provisions in these rules to issue lease right to the unauthorized occupants of the forest land also. Large areas of forest land in the CHR were encroached upon under the patronage of individuals and political parties. Later the government took a policy decision to issue title deeds to the forest lands which were encroached upon, on or before 01.01.1977. Of the 28588 ha of forestland thus decided to be given pattayam, 20363 ha were in CHR alone.

- 2.10 Large extents of fertile valleys and marshes in the forest areas were given to people who were ready to participate in a mission by the government called 'grow more food scheme' when there was a shortage of food grains following the second World War. Large numbers of people migrated to the forests and occupied the land allotted to them by the government under this scheme. Later, they encroached upon large areas of forest lands surrounding the food production areas. Many colonies in these enclosures gradually grew into large and small townships. Infrastructure such as roads, bridges and electric lines were also established in the forest areas in and around such colonies and townships. The road network in the Idukki district (formerly part of Kottayam) laid during the time of the construction of the Idukki hydro-electric project made the hilly regions and the forest areas more accessible. This enabled a lot of people to encroach upon and occupy extensive forest tracts in Idukki. The road networks established in the forest lands in other regions also encouraged encroachments. Organised encroachment into the forest land became a trend in Kerala, especially in the erstwhile Travancore region. This process had got patronage from various powerful lobbies and political parties. Later, the government took a decision to regularize all such encroachments prior to 01.01.1977. The Kerala High Court in a public interest litigation (PIL) filed before it, had directed the government to evict all those who have encroached upon

the forestland on or after 01.01.1977. The eviction of post 01.01.1977 encroachments could not be completed successfully so far and hence large extents of forest lands are still in the possession of the encroachers.

In Cochin

- 2.11 In Cochin, forestlands were leased out to private individuals for collection of timber, and cultivation of cash crops, with no limits on cutting of trees. This practice depleted the forest to a very large extent. A control was imposed on this practice only in 1812. In 1813, a head of forests by name 'Malamel Vicharippu' was appointed. Then the Forest Department collected only teak trees directly and private individuals were allowed to take the other trees after remitting the prescribed cost. In 1885, Mr. J.A. Kolhoff was appointed the first Conservator of Forests of Cochin. He framed rules for the collection of forest produces. Over-exploitation of trees resulted in the destruction of vast forest tracts during this period. Moreover large areas were cleared and converted to agricultural lands during the period from 1855 to 1875. Raising teak plantation in Cochin on the banks of Parakkadavu Puzha started in 1873 and continued till 1891. In 1883 an attempt was also made to raise sandal plantations.
- 2.12 Cochin Forest Act, enacted on the lines of the Madras Forest Act of 1882, came into effect in 1905. Rules were framed to protect and to regulate exploitation of forests. For collecting firewood, a system called 'coppice with standards' was introduced. Exploitation in the deeper forests was continued. In 1894 Mr.Kolhoff, the then Conservator of Forests proposed to construct a funicular railway to bring timber from the Western Ghats to Chalakudy with an idea of working the interior forests. A forest tramway was built between 1901 and 1905 to transport timber from Parambikulam to Chalakudy. The tramway continued to remain operational for a few decades. It brought in wealth and contributed much to the state treasury. Cochin could become a major commercial and trade hub of the Indian peninsula. The tramway helped to transport about 10,000 cum in a year and exploited about 32,000 ha of forest areas. The total extent of forest areas in Cochin during this period was about 50,000 ha. In 1908, the department was brought under the range system. Forests

were divided into ranges and sub-ranges. Regular teak plantations were started from 1915. Division system came into being in 1944.

After Independence and State Re-organization

2.13 In the beginning of the 20th century, about 50 percent of the land area of erstwhile Travancore, Cochin and Malabar was under forest cover. After independence and state re-organization, the same policy of conversion of natural forests into plantations was followed till the enactment of Forest Conservation Act, 1980 by the Government of India. Till the early 1960s, most of the plantations raised after clear felling natural forest areas were mainly of teak. Punalur Paper Mills, which was established in 1888 was in need of large quantity of pulpwood. After the establishment of Grasim Industries, Mavoor and Hindustan Newsprint Ltd., Velloor, the contractual obligation of the government to supply pulpwood to these companies increased manifold. During the second five year plan, Government of India had launched schemes providing financial assistance to raise plantations of softwood species in order to cater to the needs of pulp and other wood based industries. This had resulted in the establishment of eucalyptus and other softwood plantations on a large scale after clear felling the natural forest areas or by afforesting high altitude grasslands. The high altitude grasslands in Munnar and Peermade areas were the casualties in this process. These grasslands were branded as wastelands and eucalyptus and wattle plantations were raised. The ecology and hydrology of such areas were adversely affected in this process.

The History of Legislations Relating to Forests and Wildlife The Kerala Forest Act, 1961

2.14 Immediately after independence, three legislations viz., The Madras Forest Act, 1882, The Travancore Forest Act, 1887 and The Cochin Forest Act, 1905 were in force in Malabar, Travancore and Cochin regions in the state. The Travancore-Cochin Forest Act, 1951 was enacted subsequently to unify the laws relating to forests in Travancore and Cochin areas. After state re-organization and formation of Kerala State with effect from 01.11.1956, it was considered necessary to have a uniform legislation for forests for the entire state. Accordingly, the Kerala Forest Act, 1961 was enacted to unify and amend the law relating to the protection and

management of forests in the state of Kerala. Kerala Forest Act has been amended several times thereafter by Act 28 of 1973, Act 23 of 1974, Act 28 of 1975, Act 20 of 1986, Act 8 of 1989, Act 2 of 1993 and Act 8 of 2010.

The Kerala Private Forests (Vesting and Assignment) Act, 1971

2.15 There were vast extents of private forests in the state, especially in Malabar where such forests were mainly owned by local chieftains or landlords or temples. The private forests in the Malabar area were governed by the provisions of the Madras Preservation of Private Forests Act, 1949 (MPPF Act). Large extents of private forests were transferred to many private individuals, who cleared the forest areas with permission from the District Collector as provided in the MPPF Act or without such permission violating the provisions of the said Act. Government therefore enacted the Kerala Private Forests (Vesting & Assignment) Act, 1971 for vesting in the government, all the private forests in the state. It was a revolutionary legislation by which the ownership and possession of all the private forests in the state of Kerala stood transferred to and vested in government, free from all encumbrances without paying any compensation. Consequently 1837.79 sq.km of private forests were nationalized with effect from 10.05.1971.

The Kannan Devan Hills (Resumption of Lands) Act, 1971

2.16 By document dated 11-07-1877, the Chief of Poonjar Edavagai had granted to Mr. John Daniel Munroe, a lease of a tract of land known as Anjanad and Kannan Devan Hills, without time limit. These areas were later carved out as Kannan Devan Hills village in Devicolam Taluk. The lease was for cultivation of coffee and other agricultural crops at an annual rent of Rs.3000/-. The leasehold extended over 214.74 sq.miles equivalent to 137424 acres, out of which 127905 acres were under the possession of Kannan Devan Hill Produce Company Ltd (KDHP Co.Ltd). The balance 9519 acres, excluding the area in possession of the government and the KSEB were in the possession of the Anglo American Direct Tea Trading Company Ltd., the Thalayar Tea Company Ltd., the Thalayar Coffee Estate Ltd., the Malayalam Plantations Ltd., etc. By the Royal Proclamation dated 24.09.1899, which kept in hand the obligation of the lessee to pay the rent to the Poonjar Edavagai, the rights of the Poonjar Edavagai, in or over the said tract were vested in the

Government of Travancore. Thus the lands in Kannan Devan Hills village became the property of the government and the lessees were brought under the Government of Travancore. The KDHP Co. Ltd., which was the principal successor in interest had raised a claim to the effect that their predecessor in interest late J.D.Munroe had obtained an outright sale of the impugned land and that, it was not a perpetual lease. On scrutiny of the returns filed by the lessees under the Kerala Land Reforms Act, 1963, the government had found that large extent of agricultural lands in Kannan Devan Hills village had not been converted into plantations or utilized for the purposes of plantations and that such lands were not required for the purposes of the existing plantations. Government therefore enacted the Kannan Devan Hills (Resumption of Lands) Act to resume such lands. An extent of 127714.77 acres of land was resumed by the government, out of which an extent of 57192.65 acres of land was handed over to the Kannan Devan Hills Produce Company. An extent of 43452.80 acres of forest land was handed over to the Forest Department for retaining as forests which now falls within Eravikulam National Park and Mankulam forest division. Another extent of 17922 acres was proposed to be handed over to the Forest Department for afforestation, out of which 17066 acres have been notified under Section 4 of the Kerala Forest Act.

The Wildlife (Protection) Act, 1972.

- 2.17 The rapid decline of the wildlife population and biodiversity in India became a matter of serious concern for the Government of India. Many species of plants and animals in India were included in the Red Data Book of IUCN. It was absolutely necessary to have a special legislation to protect the wildlife and their habitats. The Government of India, therefore, enacted this law to provide for the protection of wild animals, birds and plants and for matters connected therewith or ancillary or incidental thereto with a view to ensuring the ecological and environmental security of the Country.

The Kerala Restriction on Cutting and Destruction on Valuable Trees Act, 1974.

- 2.18 Increase in demand for valuable timber like sandalwood, rosewood, teak etc. resulted in indiscriminate felling and destruction of such valuable tree species. This law was

introduced to restrict cutting and destruction of valuable trees such as sandal, rosewood and teak growing in private lands.

The Kerala Forest Produce (Fixation of Selling Price) Act, 1978

2.19 Large quantities of timber used as raw materials for wood based industries were allotted to the wood based industrial units at concessional rates. This law was introduced for the fixation of selling price of eighteen species of timber and for prohibition of sale of these forest produce at a rate less than the selling price so fixed.

The Kerala Grants and Leases (Modification of Rights) Act, 1980

2.20 Vast extents of forest and revenue lands had been leased out or given as grants by the former Maharajas of Travancore and Cochin at very low rates of lease rent and on very liberal terms relating to cutting and removal of trees from the leasehold on payment of negligible royalty. The Government had sustained huge loss on account of this. Further the tree growth in such areas was also getting depleted very fast. This Act was brought into force with a view to modifying the rights under such grants and leases made or granted by or, on behalf of the former states of Travancore and Cochin. By this enactment District Collectors were empowered to revise the lease rent and the grantees and lessees were made to pay the value of trees cut and removed by them at the seigniorage rates fixed by the Government.

The Forest (Conservation) Act, 1980.

2.21 The Government of India introduced this Act to check deforestation and to ensure conservation of forests and wildlife all over the country. As per this Act, prior concurrence of Government of India was made mandatory, for any diversion of forest land for non-forestry purpose.

The Kerala Preservation of Trees Act, 1986.

2.22 This legislation was enacted to curtail the indiscriminate felling and destruction of trees in the private lands including estates with a view to checking soil erosion and destruction of forest wealth in the state.

The National Forest Policy, 1988.

2.23 The National Forest Policy was promulgated by Government of India in 1988 to emphasize the changes in priorities in forest management taking into consideration the need for

maintenance of environmental stability, restoration of ecological balance, conservation of biological diversity and genetic resources and for checking soil erosion and denudation. The policy also gave unprecedented importance to joint forest management, women empowerment and improvement of means of livelihood of the tribals and other forest dependent communities.

The Kerala Land Assignment (Regularization of Occupations of Forest Lands Prior to 01-01-1977) Special Rules, 1993.

2.24 These rules were issued by the Government to regularize the encroachments in forest areas, which took place prior to 01.01.1977. Encroachments in forest areas extending over 28588 ha. were regularized in accordance with these rules.

The Kerala Forests (Vesting and Management of Ecologically Fragile Lands) Act, 2003.

2.25 This legislation was introduced to vest in the government the ecologically fragile lands in the state and to manage them scientifically with a view to conserving the biodiversity and maintaining ecological balance.

The Kerala Promotion of Tree Growth in Non Forest Areas Act, 2005

2.26 This Act was enacted to promote cultivation of trees in non-forest areas of the state in order to increase green cover, preserve biodiversity, arrest soil erosion and to increase availability of timber and bamboo for industry. By this enactment, the restrictions on cultivation of trees and extraction and transportation of timber were liberalized.

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

2.27 This is an enactment which has far-reaching consequences on the management of forests in the state. The Act recognizes the forest rights of the tribals and other traditional forest dwellers who were occupying forestland on or before 13.12.2005. The provisions of the Act confer on tribals rights over forestlands which were under their occupation on or before 13.12.2005 subject to a ceiling of four hectares. The act also confers on tribals community rights to collect NWFP, customary rights and common utility rights.

The Kerala Forest Policy, 2009

2.28 Government of Kerala have issued Kerala Forest Policy 2009 as per G.O.(P)No. 20/2009/F&WLD dated 02.05.2009. This policy emphasizes the mitigation measures adopted to address global warming, climate change and depletion of biodiversity. It does also explain the changes in strategies and action plans for conservation of forest resources of the state with active participation of the people, especially the tribals and other forest dependent communities.

Legal Status of Forest Lands

2.29 The legal status of forest lands falls into Reserved Forests, vested forests and proposed reserved forests. The vested forests do also have the status of reserved forests as per section 4 of the Kerala Private Forests (Vesting and Assignment) Act, 1971. An abstract of forest areas under various legal classifications is given below:

Legal status	Area Km²
Reserved Forest	9107.21
Vested Forest	1837.79
Proposed Reserved Forests	364.47
Total	11309.47

Out of the total 11309.47 sq.km forest land, 649.45 sq.km of forestland is under lease to public sector undertakings such as Kerala State Electricity Board (KSEB), Kerala Forest Development Corporation (KFDC), Plantation Corporation of Kerala Ltd. (PCK), State Farming Corporation of Kerala Ltd. (SFCK), Oil Palm India Limited (OPIL) and Rehabilitation Plantations Limited (RPL). Approximately 410 sq.km of forest land has been diverted for non-forestry purposes after getting concurrence under the provisions of Forest (Conservation) Act, 1980. An extent of about 32 sq.km of revenue land has been constituted into Kurinjimala Sanctuary during 2006. Further an extent of about 4.4 sq.km of revenue land at Vagamon has been notified under Section 4 of the Kerala Forest Act.

The History of Administration

- 2.30 The Forest Department is one of the very old departments of the State. When Travancore and Cochin States were reorganized on the 1st of July 1949, the department had eight forest divisions viz. Trivandrum, Quilon, Shencotta (now in Tamil Nadu), Konni, Kottayam, Malayattur, Chalakkudy and Thrissur. In 1950, these divisions were brought under two territorial circles with their headquarters at Quilon and Trichur. When the unified Kerala state was formed on the 1st of November 1956, under the terms of the States Reorganization Act, 1956, amalgamating the erstwhile princely states of Travancore and Cochin and the portions of Malabar which was part of the then Madras state, the Forest Department was also reorganized. Three territorial circles viz. Quilon, Chalakkudy and Kozhikkode, with fourteen forest divisions viz. Trivandrum, Thenmala, Punalur, Konni and Ranni under Quilon circle, Kottayam, Malayattur, Chalakkudy, Trichur under Chalakkudy circle and Nemmara, Palakkad, Kozhikkode and Wayanad under Kozhikkode circle were formed. The boundaries of these divisions and ranges were also notified vide G.O.(MS)No.683/ Agriculture-Forest-A dated 27.06.1958.
- 2.31 In 1960, a new development circle with headquarters at Thrissur was formed with newly created five special divisions namely Teak Plantation Division Parambikulam, Liaison Division Sungam, Grass Land Afforestation Division, Pamba (Peerumedu), Hydrel Division Kottayam and Tramway Division, Chalakkudy. In 1961, Kerala Forest Act was enacted to unify and amend the laws relating to the protection and management of forest in the state of Kerala. In 1961, the Kerala Forest School based at Walayar in Palakkad district was established and added to the development circle. Again, during 1964-65 four more special divisions viz. Kallar Valley Teak Plantation (Achencoil) Division, Teak Plantation Division, Edamalayar, Packing Paper Scheme Division, Kalady and Industrial Plantation Division, Perumbavoor were created under the development circle, for raising large scale economically valuable plantations of teak and other species, after removing commercially less valuable heterogeneous miscellaneous forest growth. In July 1965, an Industrial Plantation Circle with headquarters at Trichur was formed, with five divisions namely Perumbavoor, Perumuzhy, Kalady, Vazhachal and Kothamangalam. Consequently, the number of

divisions under the development circle was reduced to seven by excluding Chalakkudy Tramway Division and including the forest school. Subsequently, as per G.O.(MS) No.1136/68/Agri.dated 01.04.1968, the development circle was abolished and its seven divisions were brought under the territorial circles.

- 2.32 In 1971 enacting the Kerala Private Forests (Vesting and Assignment) Act, 1971, about 1837.79 sq.km of private forests were brought under the ownership and control of the Forest Department. In 1971, a Vested Forest (Special) Circle with headquarters at Kozhikkode was established with four special divisions viz. Palakkad, Nilambur, Kozhikkode and Thalassery to manage the private forests vested in the government under the Kerala Private Forests (Vesting and Assignment) Act, 1971. In the year 1971, a Rubber Plantation Circle based at Punalur was created for raising rubber plantations for providing permanent employment to the Sri Lankan repatriates. It was subsequently wound up during 1976 as it was converted into a limited company called Rehabilitation Plantations Limited, Punalur.
- 2.33 A Vigilance Wing was formed in Kerala Forest Department vide G.O (MS) No. 289/71/Agri. dated 23.12.71, with the broad intention of the enquiring into illegal removal of forest produce, monitoring and evaluation of departmental works and projects as well as evaluation of regeneration areas and various forestry practices. A subsequent government order G.O (MS) No. 4/75/AD dated 21.01.75 specified the objectives and framework for the working of Vigilance Wing. As per this government order, the objectives of the Vigilance Wing include combating effectively the irregularities and misconduct in the Forest Department and detecting and preventing forest offences.
- 2.34 A Social forestry wing was formed in the year 1982 to implement the World Bank Aided Social Forestry Project. The objectives of this wing were to supply seedling to farmers and for raising plantations along road sides, railway lines, canal banks, community lands, institution compounds and other public lands; imparting necessary training to the farmers to adopt agro-forestry model and to carry out extension activities. A separate social forestry wing headed by a Chief Conservator of Forests, with 14 district level social forestry divisions headed by Assistant Conservators of Forests supported by taluk level social forestry ranges, was created.

- 2.35 Till 1967, preparation of the working plans was under the direction of the respective territorial Conservator of Forests. With effect from 26.04.1968, a separate Working Plan Circle was formed for working plans, research, and training. The Kerala Forest School, Walayar was opened with effect from 01.11.1961 for imparting training in forestry to the Foresters and Forest Guards and the Kerala Forest School, Arippa was opened with effect from 27.05.1981 for clearing the backlog of untrained Forest Guards. These institutions were also brought under the Working Plan & Research Circle with headquarters at Thiruvananthapuram. In 1976, three working plan divisions, each under the charge of a Deputy Conservator of Forests based at Kozhikkode, Thrissur and Quilon were created for the preparation and revision of working plans. Again, on 29.04.1981, with a view to clearing the backlog of preparation and revision of working plans, the government created three more working plan divisions each headed by Assistant Conservator of Forests.
- 2.36 Silvicultural research was commenced in 1924 in Malabar, which was part of former Madras Presidency. After independence, the silvicultural research division was established in 1952 with head quarters at Kodanad in the Travancore-Cochin state to carry out adoptive silvicultural research. It was subsequently shifted to Thrissur in 1958 and finally to Trivandrum in 1967. This division was brought under the Working Plan & Research Circle. Till 1956, the division was headed by State Silviculturist as in the other states. But in 1957, it was re-designated as Silvicultural Research Officer. Now there are two divisions under the charge of Deputy Conservators of Forests (Research) with six research ranges for field research work. A Fire Depot-cum-Training Centre was also opened at Kulamavu in 1979 under the control of the Working Plan & Research Circle.
- 2.37 Wildlife Wing was constituted vide G.O.(MS) No.319/84/AD dated 02.11.1984 with effect from 01.3.1985 in accordance with the directions issued by Government of India in letter No.6-14/82/FRY(WL) dated 23.09.1982. In the said letter, Government of India had directed to constitute a separate Wildlife Wing for scientific management of sanctuaries and National Parks.
- 2.38 During the course of the implementation of World Bank Aided Kerala Forestry Project (1998-2003) the training portfolio was

made a separate wing known as Infrastructure and Human Resource Development (IHRD).

- 2.39 Forest Publicity Wing (which was subsequently renamed as Forestry Information Bureau) was created in 1979. The bureau functions as the mouthpiece of the department with a view to directing public attention to the importance of conservation of forests and biodiversity and dissemination of information.
- 2.40 Forest Veterinary Unit was formed with office at Konni during 1979-80.
- 2.41 Mini Forest Survey Unit headed by an Assistant Director of Survey assisted by a Head Draftsman, eight draftsmen on deputation from the Directorate of Survey and Land Records was also formed on 28.07.1982 for undertaking works such as survey of new forest boundaries, re-fixation of old reserved forest boundaries, re-fixation of hill men settlements, lease holds and non-revertible forest lands.
- 2.42 Forest station system, the first of its kind in the country, was introduced by the department as per G.O.(MS) No.77/88/Forest dated 15.09.1988 (**Annexure-14**). Forest station so created was similar to police station. Forest stations were established to replace beats and sections to afford more strength for effective protection of forests. Each forest station is headed by a Deputy Ranger, with two to four Foresters and 10 to 18 Forest Guards depending upon the size and nature of the forest area under each station.
- 2.43 Convener system for executing departmental works was introduced in the department vide G.O.(MS) No.118/89/Forest dated 21.12.1989 (**Annexure-15**) to replace the petty contract system. In this system one of the workers takes up the work as convener. He receives the wages as representative of all the workers in the group.

CHAPTER III

MANAGEMENT OF FOREST AND BIODIVERSITY RESOURCES

- 3.1 Kerala State has a total land area of 38863 sq.kms, which is only about 1.2 percent of the total land area of Indian Union. The state can be divided into three distinct geographic areas viz.,
- (i) the Western Ghats hill tract extending over 20900 sq.km.
 - (ii) the mid lands extending over 12000 sq.km and
 - (iii) the coastal lands extending over 6000 sq.km.
- 3.2 The Western Ghats hill tract, which occupies more than half of the geographic area of the state is the most prominent geographic feature of the state which acts as a physical barrier all along the eastern side except for the 45 km. long Palakkad gap. The crest line of the Western Ghats which is also the Peninsular Indian water shed line has an average elevation of about 1500 metres. The highest peak in the Western Ghats is 'Anamudi' with an elevation of 2694 metres. Major portion of the hill tract is along the western slope of the Western Ghats. The Western Ghats in Kerala has two east sloping plateaus viz., Wayanad and Attappadi which are parts of the Kaveri river basin and are drained by Kabani and Bhavani rivers respectively. There is also an east sloping valley viz., Anjanad Valley flanked by the Anamalais, Palni Hills and High Ranges. This valley is drained to Kaveri by Pambar. The vegetation in the hill tract areas varies depending upon the rainfall, topography and elevation.
- 3.3 The Western Ghats in peninsular India is part of the Western Ghats and Sri Lanka Biodiversity Hotspot. It is one of 34 global biodiversity hotspots for conservation and one of the two on the Indian subcontinent. A biodiversity hotspot is a bio-geographic region with a significant reservoir of biodiversity that is under threat from humans. The Western Ghats has a high proportion of endemic species. Although the total area is less than 6 percent of the land area of India, the Western Ghats contains more than 30 percent of all plant,

fish, herpetofauna, bird, and mammal species found in India. The Western Ghats contains many medicinal plants, which are still being used by the various systems of medicine. It is a unique genetic resource of the wild relatives of rice, mango, garcinia, banana, jack fruit and spices like pepper, cinnamon, cardamom, and nutmeg. In addition to rich biodiversity, the Western Ghats is home to diverse social, religious, and linguistic groups. As per 2001 census, it was estimated that 36123 tribal families belonging to 35 tribal communities were dwelling in the forests of Kerala. The home range of some of these tribes is restricted to certain mountain ranges. The Kadar, a forest dwelling primitive tribe, is largely restricted to the catchment of Chalakkudy river in the Anamalais. The New Amarambalam forests in Nilambur, in the catchment of Chaliyar river, is the sole habitat of the forest dwelling primitive tribe viz. the Cholanaikans. The settlements of the tribe Hill Pulayas in Idukki district are restricted to the Anjanad valley in the catchment of Pambar river and that of Kurumbas, another forest dwelling primitive tribe, is restricted to the Bhavani catchments in Attappady in Palakkad district.

- 3.4 The mountains of the Western Ghats south to the Nilgiris are usually designated as the southern Western Ghats. The montane areas in this region receive rainfall between 2,000 and 8,000 millimetres, within a short span of four to five months making an annual average rainfall of about 3000 mm. in the state. The Western Ghats performs important hydrological and watershed functions. The tributaries of the 44 rivers flowing across the state originate from the forests of the Ghats. Of the 44 rivers, 41 are west-flowing and three are east-flowing rivers. The total annual yield of all these rivers together has been assessed at 78.041 million cubic meters (MCM) of which 70.323 MCM is in Kerala. The comparative short length and the elevation difference across, lead to quick discharge of water into the sea. Therefore the forest cover on the mountain tops, slopes and valleys is of extreme importance in such a topographic condition. Only the effective percolation into the floor of the dense forest can sustain the flow of the water in the rivers during the lean months thereby ensuring water security. Thus, the soil and water of this region sustain the livelihoods of millions of people in the state.

Forest Types

- 3.5 There are five major forest types in the Western Ghats of Kerala: evergreen, semi-evergreen, moist deciduous, montane subtropical shola - grassland and dry deciduous. In Kerala large tracts of forest have been converted to forest plantations of teak and plantations of cash crops like cardamom and rubber during the time of the erstwhile Rajas and the colonial government. After independence, till the early eighties such conversions continued in the state under various policies and forest working plans. Some tracts have been converted to soft wood plantations of eucalyptus, albizia etc. so as to cater to the obligations of the government to the wood based industries established in the state. Forest land has been leased out to various agencies like Kerala State Electricity Board (KSEB), Kerala Forest Development Corporation (KFDC), Plantation Corporation of Kerala Ltd. (PCK), State Farming Corporation of Kerala Ltd. (SFCK), Oil Palm India Ltd. (OPIL) and Rehabilitation Plantation Ltd. (RPL).
- 3.6 The extent of forests has been assessed at 29 percent of the total geographic area of the state. The extent of each forest type is given below:

Forest type	Area Km²
Tropical Wet Evergreen Forest and Semi Evergreen	3877.44
Tropical Moist Deciduous Forest	3615.98
Tropical Dry Deciduous Forest	391.36
Montane Sub Tropical Temperate Sholas	386.42
Grasslands	501.09
Plantations	1477.39
Others	1059.79
Total	11309.47

Biological Importance

- 3.7 The forests of the southern Western Ghats are some of the best representatives of non-equatorial tropical evergreen forests in the world. It has evolved into one of the richest centres of endemism owing to its isolation. The topography creates several enclaves that have acted as refugia for species which prefer moist regions. The surrounding areas have gradually dried up through aeons. Variation in the degree of endemism in the Western Ghats depends on the latitudinal and the temperature-elevation gradient, with a greater number of endemics found in areas with prolonged wet period and in the higher altitudes in the Western Ghats, especially in Kerala. High degree of endemism in the case of plants and amphibians has been recorded in the Ashambu Hills, at the southern tip of the Western Ghats which has only a short dry period; and in the high elevation shola – grasslands in the High Ranges (Munnar region) situated 1400m above MSL. Anamudi, the highest peak in the Western Ghats having an altitude of 2694m is in the Eravikulam National Park in Idukki district. Many endemics are restricted to the environs of Anamudi and the Eravikulam National Park. The recently reported highly restricted endemic frog, *Raorchestes resplendens* is considered to be one of the few amphibian species with such a restricted home range in the world. The Nilgiris by virtue of its altitude and isolation exhibits a high degree of endemism. Silent Valley which shares its northern boundary with the shola – grasslands of the Nilgiris is endowed with many of the unique, rare and endemic species of the region. More than half the tree species found in the shola forests are endemic, especially among the families Dipterocarpaceae and Ebenaceae. The majority of the fifty endemic plant genera are also monotypic. Most of the *Strobilanthes* species in the sholas are endemics and are with restricted geographic and altitude ranges. The *S. kunthianus* (neelakurinji) which flowers gregariously in the high altitude grasslands above 1400 m is noted for its restricted distribution and beauty. It turns the emerald grass land into a blue sea of flowers, once in 12 years.

The Flora

- 3.8 It is estimated that the flora of Kerala comprises a total of 11,840 taxa of plants. Out of 4968 species of angiosperms of

the Western Ghats, about 900 are endemic. Among the Western Ghats endemics, 252 taxa are confined to the geographical range of the state. The flora comprises 866 species of algae, 4800 species of fungi, 520 species of lichens, 350 species of bryophytes, 332 species of pteridophytes and 4 species of gymnosperms. The Southern Western Ghats is the major hotspot in the peninsular India with 1286 species of endemic flowering plants, second only to the Eastern Himalayas, which has 1808 endemic species. Out of 3800 species of flowering plants occurring in Kerala, at least 1272 species are Western Ghats endemics (33.5% of Kerala flora), which represent 22.6% of Indian endemics. Seventy percent of the 1272 species of endemics have major areas of distribution in Kerala with spillovers in adjacent regions. On the basis of the study of the distributional range, it is estimated that about 102 endemic species are exclusively restricted to the geographical boundary of the state.

The Fauna

- 3.9 Of the 335 species of butterflies reported from peninsular India, 34 are endemic to this region. Almost all of these endemics are present in Kerala. The endemic species, the Red Eye Bushbrown (*Heteropsis adolpheï*) is restricted to the Nilgiris and some adjacent mountain ranges north to it. It is present in the Sispara – Anginda region of the Silent Valley National Park as well. The counterpart, the Red Disc Bushbrown (*Mycalesis oculus*) is restricted to the sholas of high elevation south to the Palakkad Gap, in the Anamalais, Periyar and Agasthyamalais. Another endemic butterfly species, the Palni Four Ring (*Ypthima ypthimoides*), which is present south to the Palakkad Gap, also has a similar distribution.
- 3.10 Reports show that around 288 species of freshwater fish are found in the primary and secondary freshwater waterbodies of the Western Ghats and associated coastal plains, of which 116 (53%, representing 51 genera) are endemic to the region. Streams and rivers in the southern parts of the Western Ghats, especially those flowing through Kerala tend to support greater diversity than those in the northern parts of this range. High levels of endemism are also associated with the ichthyofauna of the southern Western Ghats, which include several endemic genera like *Lepidopygopsis*,

Bhavania, *Travancoria*, *Horabagrus*, *Horaglanis* and *Horaichthys*. It is estimated that around 37 species of fishes are strictly endemic to Kerala, with their known distribution range restricted to lakes, rivers and subterranean streams within the geographic boundary of the state. Another 47 species of Western Ghats endemics found in Kerala have their distribution range shared with the neighbouring regions of Tamil Nadu and Karnataka. The Periyar river system is the largest in the state, from which 54 species of fishes have been recorded. Twenty four species found in the Periyar tiger reserve (PTR) are classified under different threat categories. Overall, 22 species found in PTR are Western Ghats endemics and six among them are found within the PTR boundary only. Two of them, *Hypselobarbus periyarensis* and *Lepidopygopsis typus* are endangered. The Chalakudy river is the 4th longest river in Kerala, the catchments of which is located in Thrissur, Ernakulam and Palakkad districts. The river has an exceedingly rich ichthyofauna, supporting 98 species. *Horabagrus nigricollaris* is known only from the Chalakudy and Periyar rivers. *Horabiossa arunachalami*, which is critically endangered, and *Homaloptera santhamparaiensis* are known only from the Panniyar tributary of the Periyar River, originating in the Santhampara Hills of Idukki district and immediate adjacent areas. Many species of fish occurring in Kerala are point endemics, recorded only from single sites. *Homaloptera pillaii* and *Homaloptera menoni* are endemic to the northern tributary of Kunthipuzha, inside Silent Valley National Park and to the adjacent upper reaches of the east-flowing Bhavani river in Kerala. Another endangered species, *Travancoria elongata*, a loach, is known only from the Chalakudy river and from the Pooyankutty tributary of the Periyar river. *Mesonoemacheilus remadevii* has been recorded only from the Kunthi river inside Silent Valley National Park. Similarly, *Puntius exclamatio*, an endangered barb, is endemic to the upper reaches of the Kallada river in Shendurney wildlife sanctuary and Kulathupuzha Reserved Forest. *Puntius pookodensis*, which is critically endangered, is restricted to Pookode Lake, Wayanad. *Puntius chalakkudiensis*, also an endangered fish, is restricted to the upper and middle reaches of Chalakkudy, Periyar, Pamba and Achankovil rivers, all south of the Palghat Gap. *Pseudeutropius mitchelli*, another endangered species is known from the middle reaches of the Chaliyar, Bharathapuzha, Chalakudy, Periyar and Achankovil rivers.

Barbodes wynaadensis, a critically endangered species whose population has dropped severely, is reported only from Kalindi, Noolpuzha, Kanthampara and Chooralmala rivers of Wayanad, although there has also been a record of this species at Abbey Falls in Coorg, Karnataka. The rare indigenous food fishes such as *Tor malabaricus* (the Malabar Mahseer) in our river systems are particularly threatened by various threats including pollution, dynamite fishing and the increased presence of exotic species such as *Cyprinus carpio*, *Clarias gariepinus* and *Oreochromis mossambicus*, introduced in reservoirs and lowland areas. These exotic species cause severe disruptions into the existence of several endangered indigenous and endemic fishes by competition, predation and habitat modification. So, despite supporting an exceptional diversity of freshwater fishes, of which many are endemic, Kerala's ichthyofauna is also facing severe problems, almost all of them being man-made. The protected areas of Kerala do support a rich variety of indigenous and endemic species, most of which are now seeking refuge here, considering the severity of threats faced by them in rivers outside protected areas. The release of exotic species and illegal fishing threaten the survival of native species. Hence it is of urgent concern that the water bodies inside the sanctuaries and parks of Kerala be managed effectively. It is also recommended that illegal and destructive methods of fishing and introduction of exotic fishes in the water bodies in the forest areas shall be prevented.

- 3.11 About 120 species of amphibians have been reported from the Kerala part of the Western Ghats of which more than 80 percent are endemics. The frogs *Raorchestes chalazodes* and *R greit*, *Fegervaria murthii* which are classified as 'critically endangered' by the IUCN have been reported from the hill forests of Kerala. Wayanad is the type locality of many endangered and restricted species of amphibians. Of about 160 species of reptiles reported from Kerala, nearly half are endemics. Both the species of *Salea* (*S. horsfieldii* and *S. anamalayana*) which are endemic lizards restricted to the high altitudes of the Western Ghats are present in Kerala. The High Ranges, Cardamom Hill Reserve and Wayanad are the type locality of many species of Uropeltidae, the snake family, the members of which are restricted to the hills of peninsular India.

- 3.12 About 485 species of birds, both migrants and residents, have been reported from different habitats in Kerala. All the 16 Western Ghats endemic species are present in the state. The majority of the endemics are restricted to the high altitude sholas and grasslands confining them to a limited geographical range in the State. The Nilgiri Laughing Thrush (*Trochalopteron cachinnans*), a bird which is recorded as endangered in the IUCN list is restricted to the high altitudes of the Nilgiris and nearby hills. The species is also present in the northern boundary of the Silent Valley National Park and in Siruvani – Muthikulam hills. A distinct sub species of this bird has been recently sighted in the Vellarimala and Banasura in Wayanad. Needless to say, these populations are confined to small areas in our state, making these hillocks critical areas of rare birds. The endemic bird, Kerala Laughing Thrush or Grey-breasted Laughing Thrush (*Garrulax jerdoni fairbanki*) is present in the shola grassland habitats south to Palakkad Gap in the southern Western Ghats. The subspecies *Garrulax jerdoni meridionale* is restricted to the Ashambu Hills, south of Aryankavu Pass. This subspecies has been recorded from Pandimotta in the Shenduruni wildlife sanctuary and also from the Agasthyakoodam peak in the Neyyar wildlife sanctuary.
- 3.13 Of about 145 species of mammals recorded from the state at least 15 are endemic to the Western Ghats. The Malabar civet (*Viverra civettina*) which is considered to be critically endangered by the International Union for Conservation of Nature and Natural Resources (IUCN), could not be located for the last so many decades. The lion tailed macaque (*Macaca silenus*) is among the threatened primates of the world. Periyar- Goodrical- Achancoil stretch of evergreen forest may be the remaining extensive habitat of lion tailed macaque in the Western Ghats. The Nilgiri tahr (*Hemitragus hylocrius*) is one of the most endangered mountain ungulates in the world. An estimated 2000 individuals remain in the wild now. The Eravikulam National Park and the surrounding environs support half of the living wild population and seems to be the only viable population in the world. The Nilgiri marten (*Martes gwatkinsii*), the only species of its kind in the Western Ghats is considered 'endangered' in the IUCN list. The recent reports of this animal were from the Pampadum shola and Eravikulam National Park. The forests of Wayanad together with Bandipur, Mudumalai and Nagarhole are

promising grounds for the tiger and elephant population in the south. The declaration of Parambikulam tiger reserve, which forms part of a larger network of protected areas in the Anamalais, has initiated a new step for the conservation of this charismatic species of the southern Western Ghats.

Protected Area Network

3.14 In view of the importance of conservation of biodiversity, soil and water in Western Ghats, 28.6% percent of forest lands in Kerala have been brought under a protected area network. This works out to 8.26 % of the geographic area of the state, which is almost double the national level figure. The list of sanctuaries, tiger reserves, National Parks and community reserve is given below:

PROTECTED AREA NETWORK IN KERALA

Sl. No.	Name of WLS/NPs/Tiger Reserves	Year of Formation	Total Area (Sq. km)
National Parks			
1	Eravikulam National Park	1978	97.00
2	Silent Valley National Park	1984	237.52
3	Anamudi Shola National Park	2003	7.50
4	Mathikettan Shola National Park	2003	12.82
5	Pambadum Shola National Park	2003	1.32
Tiger Reserves			
6	Periyar Tiger Reserve *	1950	925.00
7	Parambikulam Tiger Reserve *	1973	643.66
Wildlife Sanctuaries			
8	Neyyar Wildlife Sanctuary	1958	128.00
9	Peechi-Vazhani Wildlife Sanctuary	1958	125.00
10	Wayanad Wildlife Sanctuary	1973	344.44
11	Idukki Wildlife Sanctuary	1976	70.00
12	Peppara Wildlife Sanctuary	1983	53.00
13	Thattekkad Bird Sanctuary	1983	25.00
14	Shendurney Wildlife Sanctuary	1984	171.00
15	Chinnar Wildlife Sanctuary	1984	90.44

16	Chimmony Wildlife Sanctuary	1984	85.00
17	Aralam Wildlife Sanctuary	1984	55.00
18	Mangalavanam Bird Sanctuary	2004	0.03
19	Kurinjimala Sanctuary	2006	32.00
20	Choolannur Pea Fowl Sanctuary	2007	3.42
21	Malabar Wildlife Sanctuary	2009	74.22
22	Kottiyoor Wildlife Sanctuary	2011	30.38
	Community Reserve		
23	Kadalundi-Vallikunnu Community Reserve	2007	1.50
	TOTAL		3213.25

* *Periyar wildlife sanctuary and Parambikulam wildlife sanctuary were declared tiger reserves in 1978 and 2009 respectively.*

3.15 There are areas with high biodiversity value, which have not been included in the protected area network. One such example is Sankumala – Pettimudi region adjoining Eravikulam National Park which supports a good population of Nilgiri Tahr. A study conducted by the French Institute, Pondicherry has shown that Mankulam forest area supports a high degree of rare, endangered and threatened species of the Western Ghats. It has also been indicated by scientific studies that Munnar-Vattavada, Mathikettan, Chinnakanal and Pallivasal unreserved forests etc have high biodiversity conservation value, because they serve as habitats and corridors for wildlife. Therefore, there is enough scope for rationalization of boundaries of the protected area network in the state with reference to the ecological boundaries of animal population and the conservation values of the habitats and landscape. Therefore it is recommended that the boundaries of protected areas be rationalized with reference to ecological boundaries of wild animal populations and conservation values of the habitats and landscape. It is also recommended that more areas with high biodiversity conservation value and potential for conserving rare, endangered and threatened (RET) species be included in the protected area network in order to ensure their effective conservation.

3.16 The major problems facing the management of natural forests are:

- (i) eviction of post 01.01.1977 encroachment.
- (ii) degradation
- (iii) fragmentation

All the above anthropogenic factors cause threat to the long term viability of the forest ecosystems. The management practices in the forest ecosystems shall be devised taking into consideration all these factors.

3.17 The protected area network in the state is also facing serious problems due to fragmentation of habitats into smaller unviable units and lack of corridors connecting protected areas. Therefore it is recommended that corridors are to be established wherever possible at the earliest.

Need for Landscape Level Planning and Land Use Policy

3.18 Till recently, the conservation of forests, biodiversity and other natural resources was a matter of concern only for forest managers, scientists and a few other institutions or individuals working in this field. Now, there is widespread awareness on global warming, climate change, importance of biodiversity and conservation of nature and natural resources, among the judiciary, political leaders, policy makers, administrators, mass media, trade unions, religious organizations, students and the public from all walks of life. It has now been widely accepted that biodiversity is fundamental to human survival. Life is sustained only in a 20 km. thick layer on the surface of planet earth, which has an average radius of about 6371 km. Life is found down to a depth of about 10 km. in the oceans and up to a height of about 9-10 km. from the surface of earth. Life is distributed on land and in water in innumerable forms. All these life forms are interdependent and they interact with other life forms in the vicinity. This organically continuous and dynamic layer of life forms, called biosphere, covers the surface of planet earth.

3.19 Biodiversity of an area is the entire assemblage of living organisms inhabiting that area. Biodiversity is not a mere collection of independent living organisms. It is a holistic

assembly in which each life form has an important role to play in its own sustenance and in the sustenance of other living organisms, which are inter-linked and interacting with it. Therefore any planning for biodiversity conservation has to be done taking into consideration all these facts. Individual living organism of a species can exist only with minimum members of the same species, which is referred to as a viable population of species. A population of species can remain viable for a long time only if there are other viable populations of different species interacting with it and supporting it. The space occupied by such different populations is an ecological niche and several such niches constitute a habitat. Different interdependent biotic communities with their habitats would form an ecosystem. Landscape is a physiographic region with specific characteristics such as topography, climatic conditions and ecological factors, in which several ecosystems such as forests, water bodies and human habitations co-exist.

3.20 The Western Ghats in Kerala can be classified as a major landscape unit, which has several sub units with distinctive topographic characteristics and ecological as well as climatic conditions. They are:

- (i) the Agasthyamalais
- (ii) the Pandalam Hills
- (iii) the Cardamom Hills
- (iv) the High Ranges
- (v) the Anamalais
- (vi) the Nelliampathis
- (vii) the Palakkad Hills
- (viii) the Nilgiri Hills and
- (ix) the Coorg Hills

3.21 The physical barriers of the Western Ghats and the consequent inaccessibility as well as ecological insulation have resulted in an exceptionally rich and unique biodiversity in all these landscape units. The political boundaries of states or administrative boundaries of districts and divisions cannot break the continuity of biological activities or the movement

of wildlife population in the landscape units. Wayanad wildlife sanctuary, Mudumalai wildlife sanctuary and Bandipur tiger reserve are contiguous wildlife habitats in the same landscape, but falling in three different states and administrative units. Similarly, Silent Valley National Park, Parambikulam tiger reserve and Periyar tiger reserve in Kerala and Mukkurti sanctuary, Indira Gandhi tiger reserve (Topslip) and Kalakkad-Mundanthurai tiger reserve in Tamilnadu have their ecological boundaries extending beyond the state boundaries. The forest eco systems cannot be viewed in isolation for the purpose of management. The people living in and around such areas interact with the forests continuously. Various government and non-government organizations work in such areas in watertight compartments of their own exclusive programmes. Some activities of a developmental agency may become counterproductive to the activities of other agencies. A co-ordination of all such activities of different agencies at landscape level would result in synergy and sharing of responsibilities and information. This would help optimization of inputs in terms of time, energy, materials and money to bring out the best results. Therefore it is recommended that planning of all activities for conservation and development in and around forest areas shall be done in an integrated manner at landscape level co-ordinating the activities of all other government and non-government agencies.

- 3.22 The land is the prime and foremost constituent in any agricultural activity. Defective or unscientific use of land in the Western Ghat region may lead to failure of agriculture or even to natural calamities such as landslides. There are several agencies which are working in the Western Ghats to achieve their own limited goals. The use of land shall necessarily be in accordance with the land capability classification and a land use policy.

Management on Watershed and Ecosystem Basis

- 3.23 Watersheds, mini watersheds, micro watersheds, ecosystems etc are the natural functional units within the landscape. They can be easily identified with respect to geographic and ecological features. The management of the natural resources should therefore be with respect to such natural functional

units. It is recommended that an integrated land use policy for the state may be formulated and that the action plans for management interventions shall be drawn up based on watersheds or ecosystems within the broad parameters of landscape level planning and land use policy of the area.

Catchment Area Management for Water and Energy Security

3.24 Water is the lifeline of all developmental activities in society. It is absolutely essential for achieving food security, health security, energy security and socio-economic development. The forest soil with rich organic contents is highly conducive to retention of soil moisture and growth of luxuriant vegetation. In the absence of thick vegetative cover the soil on the steep slopes of the Western Ghats is highly erodable. There are about seventy small, medium and large reservoirs in the Western Ghats and its foothills. They are owned and operated by KSEB and Water Resource Department. KSEB has twenty-six hydroelectric power generating stations with a total installed capacity of 1888 megawatt (MW). These projects are the main sources of energy in the state, which cater to almost 50% of energy requirement of the state. Apart from generating cheaper energy, these hydroelectric power stations help the state power system to meet the peak demand. The average annual generation is about 7000 million units (MU), which at a modest rate of Rs.3/- per unit would cost around Rs.2100/- crores. In terms of the contribution for meeting the peak load, the financial implications of the hydel power generated in the state would be much more. The water from the hydroelectric projects of KSEB and the irrigation projects of Water Resources Department is used for the purpose of drinking and for the irrigation of thousands of hectares of agricultural lands. A huge quantity of water is diverted to Tamilnadu from interstate projects such as Mullaperiyar and Parambikulam–Aliyar for generation of energy and irrigation. We have invested huge amounts in these dams and hydroelectric projects anticipating a long lifespan. Unless these projects continue to generate energy and provide water for drinking, irrigation and other purposes during the entire lifespan, the investment would go waste. In order to achieve maximum benefits from the hydroelectric and irrigation projects it is necessary to protect the forests in catchment areas for increasing the percolation of rainwater, sustaining the lean

season inflow and reducing the sedimentation in reservoirs. Unscientific cultivation in catchment areas, degradation of forests and incidence of forest fires will aggravate these problems. Therefore the catchment areas of reservoirs of hydroelectric, irrigation and drinking water projects shall be managed with a view to improving the quality of forests in the catchment area and the lean season flow in the streams joining the reservoir.

More Scientific Input to Working Plans & Management Plans

3.25 The working plans for territorial divisions as well as the management plans for sanctuaries and National Parks do not contain all the necessary and relevant scientific information. At present, the working plans and management plans mainly deal with the action plans for a period of 10 years. The impact of past management practices, especially on soil, water and biodiversity conservation has not been fully studied by scientific analysis of data collected from the field. The details of analysis of data and inference or information derived from them are not seen used explicitly in many working plans and management plans. Therefore the scientific foundations of each recommendation for the management of forests and wildlife in the division are not seen fully explained in the working plans and management plans. In view of the changing priorities and scenarios in the field of natural resources management, the available scientific information should be incorporated into working plans and management plans, especially because of the importance of the forests of the Western Ghats as a rich assemblage of rare, endemic and endangered species. The management perspectives as well as the action plans shall reflect the concerns of the forest managers, scientific community and the public towards soil, water and biodiversity conservation. With a view to collecting and integrating the available data on soil, water, vegetation and other wildlife, the premier institutions working in the field were contacted by the department. A workshop was also arranged at Kerala Forest Research Institute, Peechi on 13th & 14th September 2010 under the leadership of Dr. C.T.S Nair, Executive Vice President and Ex-officio Principal Secretary to Government, Department of Science and Technology. The following decisions were taken:

- (i) to enlist support of Research and Development

Centres like Kerala Forest Research Institute (KFRI), Tropical Botanic Garden and Research Institute (TBGRI), Centre for Earth Science Studies (CESS), Centre for Water Resources Development and Management (CWRDM) and Institute of Forest Genetics and Tree Breeding (IFTGB) for improving the technical base of working plans and management plans.

- (ii) to translate available research findings into practice.
- (iii) to establish long term ecological monitoring stations.

3.26 The Principal Chief Conservator of Forests, Additional Principal Chief Conservator of Forests (Working Plan & Research) and other officers engaged in preparation of working plans and management plans had also approached scientific institutions such as KFRI, CWRDM, CESS and TBGRI for collating the available scientific data and information about the areas for which working plans and management plans are being prepared. However, a tangible result could not be achieved. Therefore it is proposed to engage well qualified persons in working plan divisions for collection and analysis of data.

3.27 In a working plan division, the standard staff strength is as given below:

- | | |
|---|---|
| (i) ACF /DCF (Working Plan Officer) | 1 |
| (ii) Range Officer | 2 |
| (iii) Forester | 4 |
| (iv) Other supporting office staff as per requirement | |

The Forest Range Officers and Foresters posted in working plan divisions need not necessarily be officers with scientific aptitude and ability to collect and interpret scientific data. The present pay and allowances for a Range Officer and Forester would be to the tune of Rs.36000/- and Rs.25000/- respectively per month. One Range Officer and two Foresters can be redeployed for other protection and management activities. In their place, a multi-disciplinary group of four Research Assistants and two Research Associates can be engaged on contract from graduates or post graduates in disciplines such as Forestry, Botany, Zoology and Sociology. The services of Research Assistants and Research Associates so engaged can be utilized for survey of literature, collection

of data, analysis of data, generation of information and drafting of the working plans and management plans.

3.28 There has been undue delay in the preparation of working plans in the past. In certain cases there have been instances where preparation of a working plan took more than four years. The modified arrangement would enable the department to prepare the working plans and management plans within a specified time limit with more scientific input and without any additional expenses. Therefore it is recommended that the standard strength of a working plan unit may be re-fixed as follows:

(i)	Working Plan Officer	1
(ii)	Range Officer	1
(iii)	Forester	2
(iv)	Research Associates	2 (on contract)
(v)	Research Assistants	4 (on contract)

3.29 The Chief Conservator of Forests/Additional Principal Chief Conservator of Forests (WP & R) may be authorized to engage Research Assistants and Research Associates on contract for a period of two years for the preparation of a working plan.

Ban on Clear Felling and Selection Felling in Natural Forest Areas

3.30 The present policy of ban on clear felling and selection felling in natural forest areas shall be continued subject to the condition that dead and wind fallen trees from areas other than protected areas can be removed with strict check and monitoring, provided it is economically viable without constructing additional roads.

Management of Sandal Reserves

3.31 There are severe problems of protection in the sandal reserves in Marayoor and Chinnar areas. Commendable work has been done to minimize illicit felling and smuggling of sandalwood. A new forest division with two ranges and four

forest stations has been constituted with headquarters at Marayoor. The present arrangement shall continue with more vehicles, weapons and communication facilities. More tribal watchers may be engaged for the protection of sandal. Dead and wind fallen sandalwood trees may be extracted. The question of extracting sandalwood trees of and above a particular girth shall be put to a public debate for taking decision in view of the acute protection problems and experiences in other states.

Forest Leases

3.32 Large extents of forest lands had been leased out for cultivation of cash crops and other agricultural crops by the erstwhile Rajas of Cochin and Travancore on very liberal terms which allowed cutting and removal of timber on payment of a negligible lease rent at the rate of one or two rupees per acre per annum. A total of 8538 hectares of forest lands are under such leases or grants. Plantations of cash crops such as rubber, cardamom, coffee and tea as well as agricultural crops have been developed in such lease areas. The department has already started implementation of Kerala Grants and Leases (Modification of Rights) Act, 1980 consequent to issuance of rules by Government.

3.33 Large extents of forestlands have been leased out by Government of Kerala to the following government departments and public sector undertakings for plantations of cash crops, plantations of forest species, irrigation and for generation of hydroelectric power.

- (i) Kerala Forest Development Corporation
- (ii) Plantation Corporation of Kerala Limited
- (iii) Rehabilitation Plantation Limited
- (iv) Oil Palm India Limited
- (v) State Farming Corporation of Kerala Limited
- (vi) Kerala State Electricity Board
- (vii) Water Resources Department

3.34 The following recommendations are made:

- (i) as and when lease periods of private plantations

expire such forestlands under lease may be taken over and gradually reverted to forests.

- (ii) lease rent may be suitably revised, taking into consideration the net present value (NPV) of the forests as fixed by Hon'ble Supreme Court.
- (iii) use of pesticides and weedicides may be regulated taking into consideration the long-term productivity of plantations and environmental impact as well as health hazards of using such pesticides and weedicides.
- (iv) an inventory of all lease areas may be developed and made available on the web portal of the department.
- (v) patches of forest areas with natural vegetation, if any available interspersed in plantation areas shall be retained and conserved as per a management plan
- (vi) use of organic fertilizers, organic pesticides and organic insecticides may be encouraged.
- (vii) cultivation of cash crops in very steep portions in lease areas should be discouraged.
- (viii) lease conditions may be modified to the effect that effective measures shall be implemented to improve soil and water conservation in the lease area on micro watershed basis.

3.35 More than 100 sq.km of forest lands are in private holdings on lease for various periods. These forest lands have been converted to cash crop plantations. Most of these holdings were leased out during the colonial regime. As per the provisions in the Forest (Conservation) Act, 1980 renewal of lease is a fresh lease and therefore renewal of lease will require clearance from Government of India. When the lease period expires, such lands should be resumed and gradually reverted to forests and maintained by Forest Department.

Eco Restoration Works

3.36 There are several natural forest areas and forest plantations, which have become degraded and under-stocked due to forest fires, defective management practices, excessive

extraction during selection felling in the past etc. Such areas may be taken up for eco restoration works, which may be under various schemes such as assisted natural regeneration (ANR) and restoration of degraded forests (RDF). Seedlings of medicinally valuable trees can be planted to enrich the regeneration in degraded forest areas. While undertaking such enrichment planting the natural regeneration of indigenous species shall not be cut and removed in the name of pre-planting operations such as slash felling. Weeding shall not be done in the entire treatment area since it is likely to expose the planted seedlings to attack by diseases, insects and wild animals. Invasive alien species such as *Mikania* and *Mimosa invisa* shall be eradicated and soil and moisture conservation works shall be undertaken.

Conservation of Special Sites Like Myristica Swamps

- 3.37 The first report of Myristica swamp as a special type of habitat from the Travancore region of Southern Western Ghats was in 1960. None ever referred to such an endangered habitat before. Similar habitats have been reported from Uttara Kannada district of Karnataka Western Ghats. The last remaining patches of the Myristica swamps in the southern Western Ghats are in the Kulathupuzha forest in the Trivandrum Division and in the Shenduruni wildlife sanctuary, Kollam district. The Myristica swamps represent certain rare and unique assemblage of flora and fauna in the low elevations of the Western Ghats. '*The Atlas of the Endemics of the Western Ghats (India)*,' prepared by the French Institute Pondicherry, which provides distribution maps of the trees *Myristica fatua* and *Gymnacranthera canarica*, shows exclusive association of these trees with the Myristica swamps. Therefore the forest areas supporting such special habitats may be conserved under special management plans.

Consolidation of Protected Areas and Other Forest Areas

- 3.38 Fragmentation of forest areas and consequent loss of connectivity between habitats are serious problems faced in biodiversity conservation. Similarly, enclosures within forest tracts also cause disturbance in the wildlife habitats. Man-animal conflicts resulting in crop damage as well as death and injury to humans are maximum in such fragmented habitats

and around the enclosures. Therefore, it is recommended that:

- (i) corridors may be established by acquisition of cultivated areas separating two or more forest habitats.
- (ii) enclosures within forest areas such as KP Estate in the buffer zone of Silent Valley National Park and Downton Estate adjoining Periyar Tiger Reserve etc may be acquired.
- (iii) funds from State Compensatory Afforestation Fund Management and Planning Agency (CAMPA) and XIII Finance Commission Award may be utilized for this purpose.
- (iv) financial assistance from institutions such as WWF and Wildlife Trust of India may be availed and utilized for this purpose.
- (v) schemes for voluntary resettlement of human habitations from the forest area may be formulated and implemented.

Management of Eco-Tourism

3.39 Eco-tourism activities are expanding in forest areas. Sites of natural beauty with small waterfalls or water bodies have been selected as eco-tourism sites. The Department of Tourism provides financial assistance through Directorate of Eco-Tourism for various eco-tourism projects. About 50 sites in forest areas are being developed as eco-tourism spots all over the state. There are observations to the effect that:

- (i) eco-tourism spots are gradually becoming picnic spots and conventional tourism areas.
- (ii) the number of visitors admitted to the eco-tourism spot is more than their carrying capacity.
- (iii) the elements of nature, education and interpretation, which are vital constituents of any eco-tourism programme, are getting relegated to background.
- (iv) there is no regular activity to remove plastic and

other waste, thereby causing pollution and deterioration in the spot and vicinity.

3.40 The Committee is of the view that the above observations deserve serious consideration. Therefore effective programmes have to be formulated and implemented to achieve the basic objectives of any eco-tourism programme.

The following recommendations are made:

- (i) each eco-tourism spot shall have a separate management plan.
- (ii) the management plan shall contain specific programmes and items of works for improving nature education and interpretation programmes.
- (iii) the eco-tourism programmes shall be implemented through joint forest management (JFM) in order to ensure means of livelihood to the members of Vana Samrakshana Samithis (VSS) and Eco Development Committees (EDC).
- (iv) VSS/EDC members shall be trained in various aspects such as management of visitors, education and interpretation programmes, forest fire control and in rescue operations in addition to waste management.
- (v) only primary visitor amenities such as toilet, cafeteria and information centre need be developed and no other civil construction shall be permitted, except for the security and safety of the visitors.
- (vi) there shall be specific and regular programme for management of both liquid and solid waste with special reference to plastic.
- (vii) the visitors to eco-tourism spots shall be given a briefing about the peculiarities of the biodiversity wealth of Kerala, importance of conserving soil and water, uniqueness of the eco-tourism site, dos and don'ts with regard to waste disposal and general conduct.
- (viii) site-wise long term project for monitoring all eco-

tourism spots shall be instituted by Additional Principal Chief Conservator of Forests (E&TW) to study the environmental impact on the ecosystem and socio-economic impact on the JFM institutions and their members by availing the services of an expert multi-disciplinary group.

- (ix) eco-tourism activities shall not be extended to other spots till the activities in the existing eco-tourism spots are properly and scientifically studied and environmental impact assessed by multi-disciplinary group of experts.
- (x) Divisional Forest Officers, Wildlife Wardens, Range Officers and Assistant Wildlife Wardens shall be made responsible for the proper conduct of eco-tourism activities within their respective jurisdiction.
- (xi) a web site shall be developed for eco-tourism activities so that each visitor can get sufficient information even before he visits the area.

Management of Plantations

- 3.41 Forest Department has an extent of about 1477.39 sq.km of plantations. Teak is the crop, which covers maximum extent of plantations (77789 ha) followed by acacias (10769 ha) and eucalyptus (6439 ha). It is found that the productivity in many of these plantations is poor when compared to national standards. Therefore, the management practices shall be re-oriented and intensified to achieve maximum productivity. The management interventions required for this purpose may vary from site to site. Therefore a site specific plan may be prepared for this purpose. At present, the maintenance operations in newly planted areas are being undertaken only for an initial period of three years. The maintenance operations in plantations have to continue for two more years.
- 3.42 A study of stock and growth of the teak plantations has indicated that there are large numbers of plantations which fall into the category of quality class IV and quality class V. There are several plantations in the interior forest areas where the stock is poor and natural vegetation has started coming up. In olden days, teak plantations were raised under

taungya system. Though taungya system resulted in erosion of soil and depletion of soil fertility, it is a fact that the presence of taungya cultivators and their measures to protect their agriculture crop afforded protection to the teak plants as well. Now taungya system has been totally discontinued in the department in view of the potential problems of taungya such as soil erosion and depletion of soil fertility. It would not be prudent to clear fell whatever is left in such quality class IV and quality class V teak plantations, with a view to replanting such areas. The forest areas which support quality class IV and quality class V teak plantations have been proved to be too poor to support a good teak plantation with optimum growth and productivity. Therefore it is recommended that teak plantations which fall under quality class IV and quality class V may not be clear felled for replanting. Seedlings of indigenous locally available species may be tended or planted with a view to augmenting or enriching the area.

3.43 While undertaking planting in such failed plantations or poor quality plantations or in degraded natural forests, care should be taken to ensure that weeding is not undertaken in the whole area. The planting sites may be cleared to an extent of 2m x2m so that the seedlings would not be affected by the root or shoot competition from other plants in the immediate vicinity. Once they are established the seedlings should grow competing with other plants. If the entire area is weeded after planting, the newly planted seedlings are likely to be exposed to insect attack, diseases as well as browsing by wild animals. Therefore rehabilitation of degraded forests or assisted natural regeneration shall be undertaken with due care and caution after preparing a site-specific plan for the degraded forests in that locality.

3.44 The rotation age of teak is generally 60 years. Therefore, teak plantations are routinely felled and replanted on completion of 60 years. The total extent of teak plantations raised in a year varies widely. In olden days very large areas of natural forests were clear felled and planted with teak. However, in recent years, the extent of teak plantations raised per annum has come down. In view of the problems relating to management of plantations, marketing of produce and availability of labour, the clear felling of teak plantations and replanting may be rationalized and regulated in such a way that the extent of teak plantations to be felled and replanted

every year is more or less equal to 1.5% of the total extent of teak plantations minus the extent of quality class IV and quality class V plantations which are proposed to be excluded from clear felling and replanting.

- 3.45 In view of the problems of soil erosion and landslides, the clear felling of plantations on steep terrains shall be discouraged. Further, use of chemical fertilizers, fungicides, weedicides and insecticides shall be banned in forest areas.
- 3.46 There is severe shortage of labour for forestry works. The cost of labour has also increased manifold. Nowadays, a labourer in the agricultural sector will get more than Rs.300/- as daily wages. Therefore, mechanization has to be introduced in planting and maintenance operations, logging operations and loading operations in timber depots.

Plantations in Protected Areas

- 3.47 There are several plantations in protected areas. A major portion of Parambikulam tiger reserve was formerly Parambikulam Teak Plantation Division. The teak plantations raised by TP Division, Parambikulam are still in the tiger reserve. The department has stopped all usual silvicultural operations in these plantations. Natural seedlings of indigenous species are coming up here. Similarly a sizeable portion of Periyar tiger reserve was in Grassland Afforestation Division, Peermade. One Divisional Forest Officer, four Range Officers and supporting staff were posted to plant eucalyptus in the grasslands in Vallakkadavu, Kozhikkanam, Pachakkanam and Peermedu areas. When Grassland Afforestation Division was amalgamated into Periyar tiger reserve, planting works were stopped. Remaining eucalyptus trees were removed and the coppice growth was not tended. Thus the vast majority of the eucalyptus trees have been removed in tune with the management strategies of Periyar tiger reserve. Similarly there are plantations of eucalyptus and wattles in the Kurinjimala sanctuary as well as in Mathikettan Shola and Anamudi Shola and Pambadum Shola National Parks. Some of them had been raised by Hindustan News Print Ltd. (HNL) as their captive plantations. These plantations shall be extracted as a part of eco-restoration programme and natural vegetation shall be encouraged instead. Wattle shall be extracted in a short time and in such

a way that natural regeneration will be encouraged. The Hon. Supreme Court has banned commercial extraction of trees from protected areas. But the extraction of eucalyptus and wattle which are exotics has to be done to restore the natural habitats. Hence it is recommended that eucalyptus and acacia plantation in sanctuaries and National Parks shall be extracted as quickly as possible for reverting such areas to natural forests as a part of habitat restoration and prescriptions to this effect shall be incorporated in the management plans.

Soil and Water Conservation

3.48 Soil and water are life support systems. Therefore every management practice in forest areas shall be oriented towards conserving water, soil and soil fertility without which natural forests or plantations cannot survive. The Government of Kerala have taken a policy decision to discontinue commercial extraction of timber from natural forests and to optimize productivity in plantations. No management practice to improve productivity of plantations or to accelerate biomass production in natural forests can be successful without fertile soil and sufficient moisture in the soil. Therefore, all the management practices in forest plantations and in natural forests, sufficient provision should be incorporated to implement scientific methods of soil and water conservation to ensure water security of the state. Vegetative methods shall be preferred to engineering structures for soil and moisture conservation. A project viz., 'Jala Suraksha' has been initiated by the department in Thrissur forest division. Such programmes may be formulated and implemented in other areas also.

Protection of Mangroves and Wetlands

3.49 There are many backwater systems and coastal wetlands in Kerala. There are several scattered bits of mangrove vegetation along the coast. These are unique ecosystems, which protect the coastal area and serve as breeding grounds for fish and other aquatic fauna. A lion share of these mangroves is private holdings. There has been a tendency to remove these mangrove vegetations for various developmental activities along the coastal tract. Taking over such mangrove bits forcibly into government custody would not be a prudent step, since every individual owner is likely to

destroy such mangrove vegetation once any step is initiated in this direction. The government have already started a scheme to incentivise the private owners who have been maintaining mangrove vegetation by granting financial assistance. This system may continue.

- 3.50 There are large number of wetlands in the state. A few of them have been declared to be Ramsar sites. Government have already enacted the Kerala Conservation of Paddy Land and Wetland Act, 2008 for protecting such wetlands. The ecological importance of such wetlands is being increasingly understood by the society. Though Forest Department is not the implementing agency of the said enactment, the Social Forestry Wing of the department has an important role to play in the conservation of the wetlands. Schemes may be formulated and implemented jointly by Kerala Forest Department and local self government institutions by utilizing funds from Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and other sources and ensuring co-operation of the local people.

Conservation of Sacred Groves.

- 3.51 There are a large number of sacred groves especially in the rural areas all over the state. These sacred groves are the relics of the original vegetation which had existed in those localities. They are important from the point of view of conservation of biodiversity and research. Sacred groves are being protected by temples, communities, families or individuals based mainly on their religious beliefs, in the face of tremendous pressures of developmental activities in the locality.
- 3.52 The Government have started a scheme to incentivise the individuals, institutions or communities who are maintaining the sacred groves. The services of experts from Kerala Forest Research Institute, Peechi, are being utilized for study of the sacred groves and for preparing a brief site specific plan for the future management of the sacred grove. This is done at the expense of the government. The government have also disbursed financial assistance to owners of selected sacred groves. The selection process is done in a transparent manner by a committee consisting of reputed non governmental organizations (NGOs), non governmental individuals (NGIs)

and experts in the field of conservation of nature and natural resources. The present scheme of granting financial assistance to sacred groves may continue. Further, a scheme may be formulated and implemented for the preparation of an inventory of sacred groves and for documenting their importance from the ecological and biodiversity point of view.

CHAPTER IV

MODERNISATION AND MANAGEMENT OF HUMAN RESOURCES

Human Resources at present

- 4.1 The Kerala Forest Department is the custodian of an invaluable forest wealth, which extends over about 29% of the land area of the state. Conservation of this rich natural heritage is a highly onerous task, especially in this most densely populated state with acute scarcity of land for developmental activities. Paucity of human resources for forest protection has been a vexing problem for the last several decades. The department is manned by 6768 personnel. The officers of the department fall into the following services:
- (i) Indian Forest Service
 - (ii) Kerala Forest Service
 - (iii) Kerala State Service
 - (iv) Kerala Forest Subordinate Service
 - (v) Kerala General Subordinate Service
 - (vi) Kerala Last Grade Service
- 4.2 The conditions of service of the personnel are governed by the Indian Forest Service Rules, the Kerala Forest Service Rules, the Kerala Forest Subordinate Service Rules and the Kerala State and Subordinate Service Rules, Kerala Service Rules and other relevant Rules as amended from time to time.
- 4.3 The designation wise abstract of the staff strength is given in **Annexure-16**.
- 4.4 The Forest Department has come a long way from the traditional working style, where foresters were entirely confined to the forests with practically no role in the activities outside the forest areas. Therefore the personnel management system evolved decades ago had taken into account only such duties and functions of personnel within the forest areas. However in the changing situation, especially in the last three decades, the Forest Department has begun to

involve itself in many activities outside the forest areas. Such activities include social forestry, protection of wildlife beyond the forest boundaries, managing man-animal conflicts, conservation of biodiversity outside forest areas including sacred groves, mangroves and wetlands, implementation of captive elephant management rules, eco-development and tribal welfare, joint forest management and nature education and extension. From **Annexure –16**, it can be seen that the strength of forest protection force at the cutting edge level to manage the multitudes of problems of protection consists only of 2474 Forest Guards, 913 Foresters, 147 Deputy Rangers and 204 Range Forest Officers. There are only negligible staff namely one Forest Veterinary Officer and two Assistant Veterinary Officers for tackling the problems of maintenance and monitoring of wildlife health and managing man-animal conflict. The strength of staff available in the department for wildlife research, extension and education is meagre with 10 Wildlife Assistants and three Deputy Directors of Wildlife Education. There is acute shortage of human resources for forest survey as well as for developing geographic information system (GIS) and forest management information system (FMIS). Similarly the staff strength available in Forestry Information Bureau, forest library, forest museum etc. is also negligibly small. The sanctioned strength of the department has not been increased in proportion to the multitude of new functions entrusted to the department. However there has been a marginal increase of staff for protection and social forestry activities. There has not been any addition of staff to the specialized branches like FMIS or GIS because there is no sanctioned strength of such posts in the department. Therefore there is an urgent need to increase the staff strength to accomplish the new tasks effectively and efficiently.

- 4.5 Trained manpower which is indispensable for forest management constitutes the strength of the Forest Department. There is a drastic difference between the nature of duties of a forest officer in olden times and at present. To manage forest effectively and successfully a forest officer should have insight not only into forestry science, but also into environmental problems, environmental law, financial management, marketing and social sciences. The staff should develop necessary skills for performing specialized duties such as survey using modern equipment, use of satellite imagery, use of computers and softwares, statistical methods

for wildlife census and biodiversity monitoring etc. There is shortage of facilities for imparting training to the departmental officers both at the time of induction and during actual service.

- 4.6 For the implementation of World Bank Aided Kerala Social Forestry Project and other projects during the period from 1981 to 2003, 1116 posts were created. But such posts are regarded as temporary posts though the personnel appointed to those posts have been continuing in service for the last 30 years. The social forestry staff were utilized to take up and complete compensatory afforestation works over 58170 hectares as a condition for diversion of 28588 hectares of forest land for regularization of encroachment. Thereafter, the very same staff have been employed in all the social forestry projects such as 'Ente Maram', 'Nammude Maram', 'Vazhiyorthanal', 'Haritha Theeram' and 'Haritha Keralam'. The officers who hold temporary posts in social forestry cannot avail of certain service benefits such as increments and retirement benefits. Therefore a majority of the staff are reluctant to work in the Social Forestry Wing. The proposal for making such posts permanent is under consideration of the government. The government decision in this regard has to be expedited.

Organizational Set Up

- 4.7 The department is headed by Principal Chief Conservator of Forests and Head of Forest Force. The Principal Chief Conservator (Social Forestry), and Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden are the heads of Social Forestry Wing and Wildlife Wing respectively. Additional Principal Chief Conservators of Forests at forest headquarters are the heads of other wings such as Working Plan and Research, Development & Planning, Protection, Vigilance, Development and Eco-development & Tribal Welfare. Chief Conservators are in charge of Tribal Rehabilitation and Development Mission, Infrastructure and Human Resource Development, Biodiversity Conservation, Forest Management Information System, Administration and Special Afforestation Wings.
- 4.8 The territorial circles are under the supervision and control of two Regional Additional Principal Chief Conservators of Forests stationed at Kollam and Kozhikkode. There are five

territorial circles, which are under the charge of Chief Conservators of Forests. Northern Circle, Kannur, Eastern Circle, Palakkad and Central Circle, Thrissur are under Regional Principal Chief Conservator of Forests, Kozhikkode and High Range Circle, Kottayam and Southern Circle, Kollam are under Additional Principal Chief Conservator of Forests, Kollam. There are three wildlife circles viz., Wildlife Circle, Palakkad, Wildlife Circle, Kottayam and Agasthyavanam Biological Park (ABP) Circle, Thiruvananthapuram. The wildlife circles, Palakkad and Kottayam are under the charge of Chief Conservators of Forests and ABP circle is under the charge of Conservator of Forests. There are three circles under Social Forestry Wing with headquarters at Kozhikkode, Ernakulam and Kollam. The social forestry circles at Kozhikkode and Ernakulam are under the charge of Chief Conservators of Forests and Social Forestry Circle, Kollam is under the charge of a Conservator of Forests. There are two inspection and evaluation circles, one at Kozhikkode and the other at Kottayam, which are headed by Conservators of Forests. There are 24 territorial divisions, 11 wildlife divisions, 14 social forestry divisions, eight flying squad divisions, six timber sales divisions, five working plan divisions, two research divisions and one resource survey division. There are 76 territorial ranges, 26 wildlife ranges, 33 social forestry ranges, 17 flying squad ranges and 28 timber depots. The organizational set up of the department can be seen from **Annexure-17**.

Strengthening and Modernisation of Human Resources

- 4.9 The Forest Department is an important wing of the state government, working for a better nature and future for mankind. The department has the duty to conserve forests, biodiversity, nature and natural resources and to implement projects and schemes to address crucial environmental issues such as global warming and climate change. Water is the most important tangible produce from the forests. So, the management of forests has to be re-oriented for optimizing the yield of good quality water and other ecological services. The ultimate result of any conservation programme has to be evaluated in terms of availability of clean water, clean air and congenial weather. A gradual shift from exploitation of forests to programmes aiming at the achievement of the above objectives, has taken place resulting in a change in the

policies and programmes of the Department. Therefore the nature of duties and responsibilities of the forest officers has also undergone a drastic change during the last three decades. The traditional duties of the forest officers were to protect forest and wildlife, extract timber and other forest produce and to manage forest plantations. In view of the aggravating environmental and ecological problems in society, the activities of the forest officers can no more be confined to forest areas. The forest officers are enjoined to take up various specialized duties in the changing circumstances in addition to their traditional duty of management of reserve forests. Such special duties include:

- (i) management of protected areas in the new context.
- (ii) survey of forest boundaries using modern equipment.
- (iii) soil and moisture conservation
- (iv) implementation of joint forest management programmes.
- (v) management of man-wild animal conflicts.
- (vi) implementation of programmes for nature and wildlife education, extension and interpretation.
- (vii) conservation of biodiversity in areas outside Reserve Forests such as sacred groves, mangroves and wetlands.
- (viii) research on biodiversity conservation and natural resource management.
- (ix) production of genetically superior planting materials.
- (x) tribal development activities.
- (xi) development of forest management information system.
- (xii) development of geographic information system.
- (xiii) conducting cases in the Courts and provision of legal support.
- (xiv) managing issues related to captive elephants.
- (xv) licensing of sawmills and wood based industrial units.

- (xvi) matters connected with management of non wood forest produce (NWFP).
- (xvii) improved intelligence gathering.
- (xviii) investigations of cases with inter-state and international ramifications.

4.10 The availability of staff even for the general traditional duties such as protection of forests and wildlife as well as raising and maintenance of plantations is inadequate. The non-availability of expert staff for specialized functions as indicated above is a most crucial problem. Unless man power with necessary expertise and experience is made available for the specialized functions, it would not be possible for the department to meet the challenges of the present and the future effectively.

Additional Staff for New Forest Stations

4.11 As far as requirement of staff for forest protection and maintenance of plantations is concerned the Committee has in Para 5.5 of this report expressed its view to the effect that the system of Forest Station may be extended to all parts of the state and staff strength in each station may be regulated as per the guidelines in Para 5.6, 5.7 and 5.8. It is recommended that additional staff required for this purpose shall be sanctioned.

Recruitment and Training of Forest Guards, Foresters and Deputy Rangers

4.12 Government of Kerala have issued revised rules relating to the Kerala Forest Subordinate Service and Kerala Forest Service. Direct recruitment of Foresters has been discontinued. The minimum basic educational qualification for recruitment of Forest Guards has been revised to Plus Two. The physical fitness qualification has also been revised and fixed as National Physical Efficiency One Star Standard Test. The training period of the Forest Guards has been fixed as one year. There is a proposal to improve the training facilities in the Kerala Forest School, Walayar and the Kerala Forest School, Arippa with financial assistance from Government of India and Japan International Co-operation Agency (JICA). A Kerala Forest Academy may be established at Arippa by

upgrading the presently available facilities to those of a national level institution, utilizing the funds from Government of India and Government of Kerala. In order to streamline the training and ensure regular recruitment, the training course for forest guards can be arranged during the period from 1st January to 31st December or from 1st July to 30th June and there shall be a process of annual recruitment. The ideal situation will be to have annual recruitment at the state level. At present the recruitment of forest guards is done at the district level through District Recruitment Boards of Kerala Public Service Commission. The method of recruitment may be changed from District Recruitment Board to state level with the concurrence of Kerala Public Service Commission. Till that time, the recruitment can continue at district level. But the appointing authorities can be instructed to issue appointment orders only during December or June depending upon the date of commencement of the training course. Forest guards shall be posted to field or to any other office only after undergoing the induction training as in the case of constables in the Police Department.

- 4.13 The syllabi for the training programme have been revised recently as per G.O. (MS) No. 30/2009/F&WLD dated 24.06.2009. However, the faculty and facilities available now in the forest schools at Walayar and Arippa are grossly inadequate. This is all the more true when we consider the training needs of new subjects in forest and wildlife management such as biodiversity conservation, wildlife biology, statistical methods, social surveys, eco-development, joint forest management (JFM), optimization of the productivity of the plantations, increasing the availability of medicinal plants and use of modern equipment such as differential geographic positioning system (GPS), total stations and personal digital assistance (PDA). The old practice of posting of faculty to training institutes without ascertaining their aptitude still continues. So far the compulsory induction training for Forest Guards could not be implemented fully.
- 4.14 Some of the trainers posted for imparting training do not have sufficient experience or expertise in teaching all the subjects. The Range Officers posted as instructors cannot be expected to be experts in all subjects of training. All of them need not necessarily be good teachers either. Many a time,

Deputy Rangers on promotion as Range Officers are posted as instructors in the forest schools. The subjects of forestry and forest management are expanding fast in relation to environmental and ecological services and trends in biodiversity conservation. So to make the training programme effective, the services of personnel with sufficient experience and expertise in each field have to be ensured at least on contract basis for conducting training programmes on subjects such as forest laws, environmental laws, botany, wildlife management, ecology, biodiversity conservation, soil and water conservation, forest engineering and forest survey. The trainees should also be made experts in using computer, PDA, modern communication systems and survey equipment like total stations and differential GPS. They should also be given training in use and maintenance of firearms, driving, swimming, un-armed combat and yoga. Therefore instead of creating posts for appointment of faculty for training on a permanent basis, experts can be invited to teach courses on specialized subjects. In this context, the services of institutions such as College of Forestry, Kerala Agricultural University (KAU), Kerala Forest Research Institute (KFRI), Tropical Botanic Garden and Research Institute (TBGRI), Institute of Forest Genetics and Tree Breeding (IFGTB), Kerala Veterinary and Animal Sciences University (KVASU), Kerala Institute of Local Administration (KILA), Centre for Water Resources Development and Management (CWRDM), Center for Earth Sciences Studies (CESS), Institute of Management in Government (IMG) as well as Police, Fire & Rescue and Medical Education Departments can be availed.

- 4.15 The one-year induction training programme of Forest Guards may be got recognized as a diploma course in forestry by Kerala Agriculture University. An exclusive certificate course in wildlife management for Forest Guards and Foresters in association with the Kerala Veterinary and Animal Sciences University can also be thought of. Kerala Forest School Walayar and Kerala Forest School, Arippa should be provided with modern training facilities with necessary training equipment such as computer, LCD projector, PDA, GPS, differential GPS, wireless sets, camping equipment, total station etc.
- 4.16 The newly recruited Police Constables are initially posted to armed battalions soon after completion of their induction

training. They are thereafter deployed to district armed reserve police and then to local police stations. A similar pattern can be adopted in Kerala Forest Department as well by forming circle level forest protection forces to be stationed at Kannur for Northern Circle, at Nilambur (North) for Eastern Circle, at Thrissur for Central Circle, at Munnar for High Range Circle and at Ranni for Southern Circle. The strength of these protection forces can be fixed at 20 Forest Guards and five Foresters. The Forest Guards who come out successful from the training in Kerala Forest Schools at Walayar and Arippa can be posted to these protection forces to start with. Subsequently, in accordance with seniority they can be posted to divisions and ranges. Similarly, the Range Officers who are directly recruited from the categories of forestry graduates, science graduates and departmental officers may be posted in charge of forest stations for a period of one year after completion of their training.

- 4.17 A compulsory in-service training for 3 months shall be given to the Forest Guards before they are promoted to the level of Foresters and to the Foresters before they are promoted to Deputy Rangers in order to make them competent to take up the new assignment and responsibilities in the promotion post. This in-service training can be made a pre-condition for promotion. The in-service training should be imparted at least six months to one year prior to the expected date of promotion.

Induction and In-Service Training to Ministerial Staff

- 4.18 At present there is no system of giving induction training to the newly appointed Lower Division Clerks. An induction training to infuse institutional goals and to make them proficient in the rules, regulations and office procedures will definitely improve their efficiency in the performance of duties. Therefore a compulsory induction-training course of three months' duration is recommended. Further, compulsory in-service trainings prior to promotions to the grades of Head Accountants and Senior Superintendents are also necessary to improve their functional efficiency. Further no Lower Division Clerk shall be posted directly to circle offices or to forest headquarters. Their postings should be regulated in such a way that they get exposure to the work in range

offices as well as in division offices in the beginning of their career.

Improvement of Training Facilities

4.19 The facilities for training in the Kerala Forest Schools at Arippa and Walayar are not up to the mark. While emphasizing that the training of the Forest Guards and Foresters should be devised in such a way that it should give them sufficient scientific information regarding all aspects of forests and wildlife management, plantation management and biodiversity conservation, the training should also aim at developing better physical conditions for the officers to perform in the field. They should also develop a commitment to the cause of conservation of nature.

4.20 In order to achieve the above objectives, the following recommendations are made:

- (i) a State Forest Academy may be established by improving the existing facilities at Kerala Forest School, Arippa to provide training facilities at par with national training institutes. Similarly the facilities of Kerala Forest School, Walayar may also be improved to the level of national training institutes.
- (ii) the development of infrastructure for training in Kerala Forest Schools, Arippa and Walayar shall be expedited, availing funds from the state government, central government and other sources.
- (iii) all the trainees should be given better accommodation facilities in the trainee's hostel preferably bath attached single rooms.
- (iv) a good stadium with facilities for indoor and outdoor activities should be developed in both the training schools.
- (v) a swimming pool should also be constructed in the training schools so that swimming can be made mandatory part of the training.
- (vi) since some of the faculty posted to the schools are either not willing or competent to undertake

training activities seriously, certain modules of training can be outsourced to recognized institutions such as KFRI, TBGRI, IFGTB, CWRDM, CESS, IMG, KAU and KVASU.

- (vii) the officers have to pass departmental tests prescribed in the service rules for their confirmation in service and for promotion. The departmental tests are conducted by the Kerala Public Service Commission. The subjects of the departmental tests can also be made a part of the curriculum in the training schools so that the trainees can participate in the departmental examinations of PSC even during the period of training.

Forest Special Allowance

- 4.21 In view of the difficult living conditions and increasing occupational hazards, forest officers and other staff working in offices situated in difficult and very difficult forest areas may be granted forest special allowance at the rates of 10% and 15% of their basic pay respectively.

Travel Expenses

- 4.22 Range Officers, Deputy Rangers, Foresters and Forest Guards get permanent travelling allowance (PTA) for their journeys during performance of duties within their respective jurisdiction. Quite often, they have to perform journeys outside their jurisdiction for investigation of cases, prosecution of offences in courts, attending to training programmes and meetings organized by the department etc. for which timely disbursement of travel expenses is necessary. Timely disbursement of TA is not possible for want of sufficient funds. Further, the payment of TA is not an inevitable payment as per the existing rules. Therefore drawing and disbursing officers may be delegated with power to disburse traveling expense to Range Officers, Deputy Rangers, Foresters and Forest Guards as though it were inevitable payment, to be subsequently regularized by additional allotment of funds in case of insufficiency of allotment of funds.

4.23 The jurisdiction of a Forest Guard or of a Forester or of a Range Officer or of a Divisional Forest Officer in the flying squad divisions is far more than that of their counter parts in the territorial or wildlife divisions. The staff in the flying squads have to travel extensively as part of their normal duties and also as part of their investigation of special cases. Such travels at times are beyond their normal jurisdiction and may extend even to the neighbouring states. However, the flying squad staff are eligible only for the normal PTA as per the existing TA Rules subject to monthly ceiling. Therefore the ceiling limit of the staff of flying squad should be revised to the amount eligible for the circle level officers. For journeys outside their jurisdiction, the Conservators of Forests (I & E) shall be authorized to sanction TA.

Medical Reimbursement of Officers Working in Forest Areas:

4.24 The officers working in forest areas are more prone to diseases and accidents due to adverse weather conditions, wildlife attack, attack from criminals etc. As per the present procedure for medical reimbursement, the medical treatment has to be availed through authorized medical attendant in a Primary Health Centre (PHC)/hospital under the Health Department. It is extremely difficult to follow such procedure in the case of ailments or accidents in forest areas. Therefore, medical reimbursement has to be allowed to the officers of the Forest Department working in forest areas for the treatment availed by them even from the nearest private hospital in case of emergencies.

4.25 Forest officers working in the field are prone to get injured during the performance of their duties. There have been many instances of death of staff caused by attack by organized gangs using lethal weapons. Twelve officers have lost their lives due to attacks by organized gangs or by wildlife during the course of performance of duties in the past. Whenever such accidents happen, it may not always be possible to give medical assistances to them in a hospital recognized by the government for the purpose of medical reimbursement. Many a time, such injured officers may have to be subjected to immediate specialized surgery such as micro vascular surgery, neuro-surgery, thoracic surgery etc., for which specialists may be available only in certain hospitals. In the normal course, medical reimbursement is admissible only if treatment is availed from a government hospital. Special government orders have to be obtained in

individual cases. It has been found that such attempts to obtain reimbursement of medical expenses are time consuming. The department should provide health insurance facilities to all the staff who are working in the field. Insurance companies under the Government of India may be consulted to devise a special health insurance policy to meet such eventualities. In the case of serious injury or ailments sustained during the course of performance of their duties, the forest officers shall be given medical reimbursement for treatment such as vascular surgery, neuro surgery and thoracic surgery undergone by them in any specialty hospital even in the private sector.

Parity in Pay and Allowances With the Police

- 4.26 There has been a lot of heart burn and discontentment among the uniformed staff and other officers in the Forest Department because of the disparity in pay scales and allowances such as uniform allowance, risk allowance, permanent traveling allowance etc. when compared to the pay and allowances of officers in the Police Department. Parity in pay and allowances may be granted to the uniformed staff and other officers in the Forest Department with their counterpart officers in the Police Department as given below:

Sl. No	Designation in Forest Department	Designation in Police Department
1	Forest Guard	Police Constable
2.	Forester	Head Constable
3.	Deputy Ranger	Sub Inspector of Police
4.	Range Officer	Circle Inspector of Police
5.	Assistant Conservator of Forests	Deputy Superintendent of Police
6.	Deputy Conservator of Forests (Non IFS)	Superintendent of Police (Non IPS)

Creation of Training Reserve

- 4.27 At present Forest Guards are given initial posting after appointment to divisions and then they are sent to training schools. The posts of forest guards who are relieved for training fall vacant. Therefore at any point in time the actual

strength of forest guards in the division will be significantly less than the total strength because of the absence of those deputed for training. Therefore a training reserve may be created with a minimum strength of 100 that is 50 trainees each in two forest schools. Similarly, a training reserve of 20 Range Officers may also be created.

Strengthening Social Forestry Activities in Panchayati Raj Institutions.

4.28 The Prime Minister of India has announced Green India Mission (GIM) to increase the green cover of the country in view of the impending dangers of global warming and climate change. As per the strategy of GIM, the majority of the works will be done through Panchayati Raj institutions, Gram Sabhas, Joint Forest Management Committees (JFMCs), Community Forest Management Groups, committees setup under the Forest Rights Act, Biodiversity Management Committees etc. GIM also envisages at developing a community based change agents viz. community foresters from among the educated youth, who will facilitate the planning, implementation and monitoring of the mission activities at local level. The Forest Department will have to play a key role to provide technical support to Panchayati Raj institutions and other institutions like Grama Sabhas and JFMCs to take up the activities under Green India Mission. There are 978 Grama Panchayats in the State. Though it would be ideal to have one Forester in each Panchayat, it would involve huge financial commitment as salary to 978 Foresters. Therefore, it is recommended that a Forester and two Forest Guards may be posted at each of the 152 Block Panchayats to start with. Their services can also be utilized for promoting the conservation of sacred groves, mangroves and wetlands within their jurisdiction, monitoring the issues connected with wildlife straying into homesteads and captive elephants. Additional posts of 150 Foresters and 300 Forest Guards may be created for this purpose.

Expertise for Special Functions in Wildlife Management

4.29 Wildlife management is emerging as a highly specialized subject. Proper and scientific management of wildlife requires insight into subjects such as wildlife biology, veterinary science, biodiversity conservation and monitoring, wildlife

population and health monitoring, habitat monitoring, socio-economics of forest dependant communities etc. Even for the general protection duties in sanctuaries and national parks, the regular forest officers are not sufficient. Further, to undertake the research work and studies and to formulate a scientific foundation for the management of wildlife in protected areas, the service of experts in the respective fields is necessary. Therefore, a group of experts consisting of a Forest Veterinary Officer, a Wildlife Biologist, a Wildlife Ecologist, a Botanist and a Social Scientist with specialization and experience is necessary. Such a group of experts is necessary for each protected area. But in view of the financial implications, they can be provided for a group of protected areas as shown below:

- (i) Neyyar, Peppara and Shendurney sanctuaries and Agasthyavanam Biological Park
- (ii) Periyar tiger reserve (East) and Periyar tiger reserve (West).
- (iii) Eravikulam National Park, Chinnar wildlife sanctuary, Mathikettan Shola National Park, Anamudi Shola National Park, Pampadum Shola National Park, Kurinjimala sanctuary, Idukki wildlife sanctuary and Thattekkad bird sanctuary.
- (iv) Parambikulam tiger reserve, Silent Valley National Park, Chimmony wildlife sanctuary, Peechi wildlife sanctuary and Chulannur peafowl sanctuary.
- (v) Wayanad wildlife sanctuary, Malabar wildlife sanctuary, Kottiyoor wildlife sanctuary and Aralam wildlife sanctuary.

4.30 Such special staff with required expertise and experience can be engaged as a part of research and monitoring programmes, which can be undertaken as collaborative programmes with institutions like KFRI, TBGRI, IFGTB, CWRDM and CESS using funds from the state plan schemes and from the Government of India.

Special Team for Survey of Forest Boundaries.

4.31 The boundaries of forests were notified with respect to certain physical features or with respect to some survey points. There has been a large number of cases relating to the boundaries of reserve forests. During 1971 all the private forests in the state were nationalized in accordance with the provisions of Kerala Private Forests (Vesting and Assignment) Act, 1971. The erstwhile owners of the private forest were given a chance to prefer applications before the Forest Tribunal for exemption from vesting. An extent of 1837.79 sq.kms of private forests had been vested in the government. In many cases, the Hon'ble Forest Tribunal or the Hon'ble High Court or the Hon'ble Supreme Court have ordered the Government to restore possession of the vested forest lands to the erstwhile owner. In order to implement the orders of the Hon'ble Forest Tribunal, Hon'ble High Court and Hon'ble Supreme Court as well as for settling the disputes relating to boundaries of forests it would be necessary to survey the boundaries of existing forest areas. Modern survey equipment such as differential GPS and total stations are necessary for this purpose. Similarly, there is a need to survey and demarcate the ecologically fragile lands notified under the provisions of the Kerala Forests (Vesting and Management of Ecologically Fragile Lands) Act, 2003. Many litigations about ecologically fragile lands, which are pending in various Tribunals and Courts also require survey of the lands involved in the litigation. Additionally, there is a continuous need to engage surveyors for settling boundary disputes between the department and the individuals holding land along the boundary of forests. All these need a concerted effort for faster survey and demarcation for which the present set up in the Forest Mini Survey Unit, Kozhikode is inadequate. Moreover, the out-turn as per the existing norms of the Department of Survey and Land Records is small when compared to the out turn of modern survey equipment. Hence, a programme of survey with the existing set up is not likely to make much headway. Therefore, survey teams have to be constituted at circle level for undertaking surveys using modern equipment as mentioned above. The boundaries can also be geo-referenced and digitized. There are posts of surveyors in various territorial divisions and such posts have to be filled by deputation from the Department of Survey and Land Records. In view of the scarcity of staff in the

Department of Survey and Land Records, many posts of surveyors in the divisions are lying vacant. Therefore the officers in charge of circles may be authorized to engage surveyors on contract if surveyors are not available on deputation from the Department of Survey and Land Records.

Exclusive Staff for Joint Forest Management

- 4.32 The department has adopted joint forest management as a strategy for protection and conservation of forest as well as conservation of biodiversity. The organizational arrangements such as formation of Vana Samrakshana Samithis (VSS) and eco development committees (EDC) at local level, formation of forest development agencies (FDA) at division level and constitution of State Forest Development Agency at state level have been completed. There are 380 Vana Samrakshana Samithis, 191 eco development committees and 34 forest development agencies. Detailed guidelines have also been issued for the working of the Vana Samrakshana Samithis, eco development committees and forest development agencies. In the present set up, a local Forest Guard/Forester is expected to function as ex-officio secretary of VSSs/EDCs. Such Forest Guards/Foresters who are functioning as ex-officio secretaries of VSSs/EDCs will not be available fully for their normal protection duties or for the duties in connection with joint forest management. Further they are also liable to be transferred, thereby breaking the continuity of human resources for management of such vital institutions at grass root level. In the normal course, these Foresters/Forest Guards maintain the financial accounts of VSSs/EDCs. Seldom do they get time to care for various other aspects such as socio-economic development of the forest dependent community. Therefore it is absolutely necessary that one Forester or one Forest Guard is posted exclusively as secretary for looking after the affairs of a group of three VSSs or EDCs. This would necessitate creation of 120 posts of Forest Guards and 60 posts of Foresters. Further this staff also requires regular training and updating of the information and procedures. It is also recommended that one sociologist, a facilitator and a clerk may be engaged at each forest development agency (FDA) and one sociologist, one economist, one accounts officer and two clerical staff at State Forest Development Agency (SFDA). It would be better to appoint the sociologist, facilitator and clerk in FDAs and the

sociologist, economist, accounts officer and clerk at SFDA on contract basis using the amount earmarked for administrative expenses under National Afforestation Programme (NAP) or under other similar projects.

- 4.33 The Forest Guards/Foresters who are posted as ex-officio secretaries of the VSSs/EDCs shall necessarily be given special training for undertaking activities relating to socio-economic development of tribal and other dependent communities in JFM mode. The requirement for additional staff for JFM has already been indicated in previous paragraph.

Special Staff for Nature Education, Extension and Interpretation

- 4.34 The strongest foundation for nature conservation is the enlightened public, who are rationally sensitive to the issues in the field of conservation and are willing to give constructive support. Citizens who are environmentally conscious and resource efficient are the backbones of conservation of environment and natural resources as well as of sustainable development. They are essential for conservation of bio-diversity and optimization of ecological services from forests, through the strategy of JFM and for reducing man-wild animal conflict. For this purpose aggressive, purposeful and meaningful programmes for nature education, extension and interpretation should be implemented. Therefore the functions of following units for the purpose of nature education under Kerala Forest Department should be properly co-ordinated and intensified:

- (i) Director, Forestry Information Bureau (FIB)
- (ii) Public Relations Officer
- (iii) Assistant Conservator of Forests Extension, Kozhikode, Ernakulam, Kollam under Social Forestry Wing.
- (iv) District Forest Extension and Information Centre (DFEIC) in the districts
- (v) Deputy Director of Wild Life Education and Wildlife Assistants in protected areas.

4.35 In order to revitalize the activities in this field, sufficient numbers of staff with expertise and aptitude are necessary. Therefore these offices should be strengthened with necessary staff to formulate and implement constructive and meaningful programmes.

4.36 Under the World Bank Project, DFEICs were opened in all districts. However, they have not been made fully functional. The department has been doing excellent work to increase the tree cover in the state through programmes like Ente Maram, Nammude Maram, Haritha Theeram, Haritha Keralam etc. The Government of India awarded Indira Priyadarshini Vrikshamitra Award for the programme Ente Maram in 2007. In 2008 the state was awarded Indira Priyadarshini Vrikshamitra award again for expanding the extent of Reserved Forests. The social forestry activities have also been recognized by United Nations Environment Programme (UNEP). A large number of NGOs are working in the field of nature conservation with special references to mangroves, marine turtles etc. There are large numbers of sacred groves in the rural areas, which are protected based on religious beliefs of certain communities or clans or families. These sacred groves are relics of the original vegetation that existed in that region. Forestry clubs and nature clubs have been started in many schools and colleges. However, for want of human and financial resources the extension and education activities could not be undertaken in the desired manner so far. Therefore it is recommended that the available strength in the education and extension wings may be reinforced by creating the following posts:

(i)	Wildlife Assistant (one for each DFEIC and sanctuaries)	20
(ii)	Assistant Forest Publicity Officer	20
(iii)	Data Entry Operator	20

4.37 The following recommendations are also made:

- (i) Director, Forestry Information Bureau shall be an officer of and above the rank of Conservator of Forests, preferably with aptitude for extension and education activities.

- (ii) Principal Chief Conservator of Forests shall be authorized by proper delegation of powers to re-deploy the department staff who have aptitude and expertise for education and extension works, irrespective of their rank.
- (iii) nature education packages for primary school students, secondary school students, under graduate students, post graduate students, senior executives, journalists, members, officers and staff of the Panchayati Raj institutions, legal practitioners, judiciary, police officers and the public should be developed and implemented.
- (iv) sufficient equipment and gadgets such as vehicles, laptops, computers, exhibition materials, projectors; films on wildlife, nature education, important tree species, medicinal plants, raising nurseries etc., shall be made available.
- (v) formulation and implementation of programmes and packages can also be out-sourced to reputed and qualified NGOs or NGIs.
- (vi) services of noted writers, artists, journalists, NGOs, NGIs should be utilized for effective nature education and extension activities.
- (vii) funds allotted under the following budget heads should be made available to this unit.
 - a) biodiversity conservation
 - b) Wildlife
 - c) social forestry
 - d) Teak Revolving Fund
 - e) Finance Commission Awards
 - f) extension and education.

4.38 Additional financial resources may also be allotted to this wing. The extension and education activities, which include printing and publishing of books, booklets, poems, brochures, field guides etc. and production of films can be undertaken utilizing the services of NGOs and other experts in the field. In each district, three or four persons with necessary

knowledge and aptitude can be selected and employed for the work of extension and education. The centres such as Abhayaranyam, Kaparikad, (Kodanad); Suvarnodyanam, Nedumbassery; Vanaparvam, Thamarassery; Sasyasarvaswom, Chaliyam; Santhwanavanam, Kozhikode and Vana Vigyan Kendra, Kuthiran, Thrissur shall also be manned appropriately to improve the education and extension activities. Similar augmentation of staff for education and interpretation is required in protected areas also.

Strengthening Research Activities

4.39 The department has a research wing headed by Additional Principal Chief Conservator of Forests (Working Plan & Research). The existing strength of technical staff in Working Plan and Research Wing is given below:

- | | | |
|-------|--|---|
| (i) | Additional Principal Chief Conservator of Forests | 1 |
| (ii) | Deputy Conservators of Forests (Research) | 2 |
| (iii) | Working Plan Officers | 6 |
| (iv) | Assistant Conservator of Forests (Forest Resource Survey Cell) | 1 |
| (v) | Range Officers at a rate of two per working plan office | |
| (vi) | Foresters at a rate of four per working plan office. | |

4.40 There is not enough staff with sufficient expertise and experience to conduct research activities in the field of biodiversity conservation, wildlife management, plantation forestry etc., or for long term monitoring of biodiversity and habitats. The research unit should be strengthened by engaging research assistants and research associates on contract basis in projects for studies in the field, which have direct relevance to management of forests, protected areas and biodiversity conservation. The post graduate students from the College of Forestry in Kerala Agricultural University, Mannuthy, Thrissur; Tamil Nadu Agricultural University, Coimbatore; Indian Institute of Forest Management, Bhopal;

Indian Veterinary Research Institute, Izat Nagar; Wildlife Institute of India, Dehradun; Kerala Veterinary and Animal Sciences University, Wayanad etc. may be encouraged by the payment of stipends and by extending to them other facilities for research, which are required by the Forest Department. Collaborative programmes as a part of their curriculum can be worked out in consultation with the teaching and research faculty of such institutions.

- 4.41 At present, the funds available for research under various budget heads such as wildlife management, biodiversity conservation, teak revolving fund, pulpwood revolving fund etc. are distributed for various projects submitted by institutions like KFRI, TBGRI, CWRDM, CESS, KAU, IFGTB etc. Activities of various units under research wing are confined to maintenance of permanent preservation plots, research plots, seed production areas and collection of seeds for distribution to various ranges for raising nursery. Officers with aptitude for research shall be posted to this wing. The officers from research units and other officers of the department with aptitude for research shall necessarily be co-investigators in the research projects sanctioned to the scientists of various institutions. This will enable a fusion of field experience and scientific research methods, which would generate scientific information with direct utility in the field. Necessary research assistants and research associates can be engaged in the research projects sanctioned to the research units in the department.

Development of Skilled Manpower for FMIS and GIS

- 4.42 The Forest Department had started FMIS wing under the World Bank Aided Kerala Forest Forestry Project. This wing is engaged in processing data to generate management information with two functional units namely FMIS and GIS. The present staff strength of this wing is as given below:

Chief Conservator of Forests (FMIS)	:	1
Deputy Conservator of Forests	:	1
Assistant Conservator of Forests	:	1
Range Officers	:	4
Foresters	:	3

Forest Guards	:	8
Office staff	:	9

4.43 RITES India Limited was engaged to develop software for the department. They had developed the following modules:

- (i) Monthly Accounts System
- (ii) Civil Infrastructure System
- (iii) Court Case Monitoring System
- (iv) Fire Protection System
- (v) Industrial Raw Materials / NWFP System
- (vi) Natural Forest Management System
- (vii) Offence Information System
- (viii) Participatory Forest Management System
- (ix) Plantation Management System
- (x) Research Projects Management System
- (xi) Progress Reports System
- (xii) Sales Management System
- (xiii) Social Forestry and Nursery System
- (xiv) Stores, Tools and Plants System
- (xv) Forest Development Agency System
- (xvi) Personal Information System
- (xvii) Geographic Information System

4.44 However, the implementation of these systems using such modules is not complete. The Committee has examined the reasons for this a state of affairs. It is seen that there are no technically qualified experts in software or hardware in that wing to improve the system or to solve day-to-day teething troubles encountered in the process of accelerating the implementation of computerization. Moreover, although the department has been chosen as one of the departments for total computerization and computers are in use in all the offices down to range offices, there is no system administrator or professional programmers in the department.

Working with the traditional staff pattern is not enough to achieve the desired goals.

- 4.45 Officers such as Chief Conservator of Forests (FMIS), Assistant Conservators of Forests and Range Officers from the regular cadre of the department, who are posted to this wing need not necessarily have aptitude or expertise in the subject. Many of them are posted to the FMIS wing due to administrative exigencies and they continue in the wing for a short period. Further, the staff in the field is not given adequate training and consequently the computers are being used mainly for typing and hardly for the collection & processing of data and generation of information. Therefore, computerization has not achieved the anticipated goal. To improve the situation, it is essential that system administrators and programmers are engaged either by creation of new posts in the department or in special projects. A team consisting of a system administrator and a programmer may be constituted by creating new posts at circle headquarters in order to manage the hardware, to develop and maintain software and to train the ministerial and executive staff in use of computers and softwares with a view to accelerating computerization and technological advancement. At forest headquarters, apart from a system administrator and a programmer, two posts of GIS programmers and four posts of GIS developers may be created.
- 4.46 It has to be noted that there is no channel for promotion for the personnel appointed to such posts in the department. It would be better to fill up such posts either by deputation from other departments or institutions or by appointment on contract. The expenditure on this account can be charged under various projects.

Legal Support System

- 4.47 The litigations handled by the Forest Department fall into various categories such as:
- (i) forest offence under Kerala Forest Act, 1961.
 - (ii) wildlife offence under Wildlife (Protection) Act, 1972.

- (iii) offences under other enactments relating to forests
- (iv) suits and appeal suits involving claims over forestlands.
- (v) original applications, appeals and special leave petitions under Kerala Private Forests (Vesting and Assignment) Act, 1971.
- (vi) original applications, appeals and special leave petitions under Kerala Forests (Vesting and Management) of Ecologically Fragile Lands) Act, 2003.
- (vii) writ petitions, writ appeals and special leave petitions relating to forests and environment.
- (viii) writ petitions, writ appeals and special leave petitions relating to establishment matters.
- (ix) public interest litigations.
- (x) cases before Central Administrative Tribunals, Human Rights Commission, Information Commission, Lok Ayuktha etc.

4.48 Therefore, the service of a legal assistant has to be necessarily made available in the following offices for the speedy disposal of cases:

- (i) Office of the Custodian (Vested Forests).
- (ii) Office of the Custodian (Ecologically Fragile Lands)
- (iii) Divisional Forest Office, Nemmara
- (iv) Divisional Forest Office, Palakkad
- (v) Divisional Forest Office, Mannarkkad
- (vi) Divisional Forest Office, Nilambur North
- (vii) Divisional Forest Office, Nilambur South
- (viii) Divisional Forest Office, Wayanad North
- (ix) Divisional Forest Office, Wayanad South
- (x) Divisional Forest Office, Kannur
- (xi) Office of the Chief Conservator of Forests, Central Circle, Thrissur.

- (xii) Office of the Chief Conservator of Forests, High Range Circle, Kottayam.
- (xiii) Office of the Chief Conservator of Forests, Southern Circle, Kollam.

Recruitment of Sports Quota

4.49 Physical fitness is a necessary qualification for each and every forest officer without which no forest officer can perform his duties perfectly. The department has been organizing sports and games at circle level and state level to encourage physical fitness of staff. The All India Forest Sports and Games Meet is also conducted every year. Therefore, in order to encourage sports activities in the department, the following actions are recommended:

- (i) wherever possible, facilities for outdoor games such as volleyball, basketball, shuttle badminton etc. should be provided to the field staff and office staff.
- (ii) forest stations in the interior forest areas can be provided with facilities for indoor games such as caroms and chess.
- (iii) five sports persons who have represented the state in any sports or games event may be selected through a special recruitment process every year by a committee consisting of Chief Conservator of Forests (IHRD), a nominee of the government in Department of Forests and Wildlife not below the rank of the Joint Secretary, a nominee of the government in Department of Sports & Youth Affairs not below the rank of the Joint Secretary, Director of Sports and one expert each from Kerala Sports Council and Lakshmi Bai National College of Physical Education. Such selected sports persons may be appointed based on their educational qualifications to any of the categories such as Forest Guard, clerk, driver, peon and watcher.

Special Units for Licensing of Sawmills and Other Wood Based Industrial Units.

4.50 In accordance with the order of the Hon'ble Supreme Court dated 30.10.2002 in Writ Petition No. 202/95 and subsequent orders, the state shall not permit any unlicensed sawmills or wood based industrial units to function. It was also ordered that a no objection certificate is a pre-requisite for the commencement or continuance for sawmill or wood based industrial unit. The Central Empowered Committee constituted by the Hon'ble Supreme Court has issued guidelines for the issuance of sawmill and wood based industrial units. It has been stipulated that the government should pass rules to regulate functions of sawmill and other wood based industrial units. It has been roughly estimated that there are around 10,000 sawmills and other wood based industrial units in the state. Rules for regulating the commencement and operation of sawmill and wood based industrial units are under consideration of the state government and Central Empowered Committee. Once the rules are issued by the government, the no objection certificates issued by the state level committee with the approval of the Central Empowered Committee will have to be reissued under the rules. Further periodic renewal of such licences would be required once in three years. Moreover new applications are also expected to increase the workload both in the office and in the field. Therefore, special additional staff is required for processing the files relating to the licensing of sawmills and wood based industrial units in divisional offices proportionate to the number of sawmills and wood based industrial units as shown below:

Sl. No.	Name of the division	No. of sawmills & wood based industrial units	No. of additional clerks
1	Kannur	1300	3
2	Wayanad North	100	0
3	Wayanad South	125	0
4	Kozhikode	1200	3
5	Nilambur North	900	2
6	Nilambur South	1000	2
7	Mannarkkad	50	0
8	Palakkad	350	1
9	Nemmara	300	1

10	Thrissur	900	2
11	Chalakkudy	300	1
12	Vazhachal	125	0
13	Malayattur	1725	4
14	Kothamangalam	150	0
15	Munnar	20	0
16	Mankulam	0	0
17	Marayoor	0	0
18	Kottayam	350	1
19	Ranni	375	1
20	Konni	100	0
21	Punalur	300	1
22	Thenmala	5	0
23	Achenkovil	0	0
24	Thiruvananthapuram	350	1

Special Powers to Principal Chief Conservator of Forests and Head of Forest Force to Redeploy Staff to Meet Emergencies and to Take Up Duties of Special Nature

4.51 There are several occasions when the work load in various offices would come down whereas the work load in various other offices may increase. This is especially applicable to timber depots, social forestry offices, field offices under Working Plan Officers etc. The work load in timber depots may vary depending upon the stock of timber. The work load in social forestry ranges and divisions would be more during the period from December to July. The field work relating to preparation of Working Plans are undertaken mainly during summer season and the field staff may not have sufficient work when the working plan is written based on the data collected from the field. In such occasions the staff with lesser work load can be redeploy to offices where work load is more, in order to ensure more efficiency and output. Therefore, the Principal Chief Conservator of Forests may be authorized to redeploy temporarily the field staff and the office staff for emergency works and for clearing pending works for a period of six months.

CHAPTER V

MODERNISATION OF FOREST PROTECTION

- 5.1 The Kerala Forest Department is headed by the Principal Chief Conservator of Forests (Head of Forest Force). There are two independent wings namely Wildlife and Social Forestry which are headed by the Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden and Principal Chief Conservator of Forests (Social Forestry) respectively. The Principal Chief Conservators of Forests are assisted by Additional Principal Chief Conservators of Forests and Chief Conservators of Forests with the technical and ministerial staff working under them at the forest headquarters.
- 5.2 The Forest Department continued to function with the traditional administrative/protection unit of beat/ section/ range/division structure till 1988. The duties and responsibilities of various categories of forest officers are defined in the Kerala Forest Code. In the traditional beat/section system, the Forest Guards who have the charge of the beat, work independently of the neighboring beat. In a beat there may be one or two Forest Guards and Forest Watchers. In this set up, the beat officers have a specified and limited jurisdiction. Because of this reason, each beat officer comes to know about the beat area and the people in and around it thoroughly. However, the limited number of beat officers has disadvantages also. They can easily be challenged or attacked or overpowered by gangs who indulge in smuggling of forest produce and in other forest and wildlife offences. There have been several such instances where the beat guards had to suffer set backs and physical assaults during the course of their protection functions. There have been many cases of death of protective staff during the performance of their duties. It is in this context that the department thought of a viable and more effective alternative for the patrol system within the forests in which the staff can be given better logistic and moral support. In the year 1988, the department decided to bring in a remarkable change in the system of protection by reorganizing sections and beats to establish forest stations similar to police stations. In a station system more number of staff would be available for protection function or for emergency action at short notice, which is not the case in the traditional beat/section system.

As per G.O (MS) No.42/88/Forests dated 07.05.1988, forest station system was introduced in the forest divisions of Nilambur North and Nilambur South where 11 forest stations were established and commissioned. Subsequently, as per GO(MS)3/90/Forests dated 18.01.1990, sixteen stations were started in Ranni forest division and Konni forest division; as per GO(MS)56/91/Forests dated 16.07.1991 thirty seven stations were started in Munnar, Vazhachal, Wayanad North and Malayattoor divisions, as per GO (MS)18/92/Forests dated 03.03.1992, twenty four stations were started in Kottayam, Thrissur and Mannarkkad divisions; as per GO (MS)66/05/Forests dated 03.06.2005, two forest stations were started in Kadavari, Kambakallu; as per GO(Ms)No.67/05/ Forests dated 08.06.2005, two forest stations each were started in Marayoor and in wildlife division Chinnar; and as per GO(MS)No.03/2011/F&WLD dated 29.01.2011, two stations in Wild Life Sanctuary Wayanad, three stations in Nemmara Division, three stations in Chalakudy division, and one station each in Kothamangalam and Punalur divisions were also started. At present there are 104 forest stations in the state, the details of which are given in **Annexure-18**. The circle-wise abstract of forest stations is given in **Annexure – 19**.

- 5.3 Each station is headed by a Deputy Ranger. Other station staff consists of two to four Foresters, ten to eighteen Forest Guards and one driver. Most of the stations have a jeep, wireless sets, walkie-talkie, weapons, search light, GPS etc. The Deputy Rangers in the stations have been authorized to charge cases in which the government loss is up to Rs.2500/-
- 5.4 In a station, there will always be a Forest Guard/Forester on station duty. The Deputy Ranger in charge of the station assigns daily duties to the various staff members who shall enter in the general diary (GD) the duties performed by him/her, when he/she returns to the station. All the officers in the forest station shall report for duty at 8 AM every day and affix their full signature in the GD after writing their names in their own handwriting. The Deputy Ranger monitors the performance of the duties assigned to each officer working under him. The Deputy Ranger shall submit a copy of the GD to the Range Officer within 24 hours from the closing of GD. In inaccessible and remote areas where inspection on a day-to-day basis is not possible from the station, out posts are set up within the station limits where staff are permitted to stay

and discharge the protection duties. In this case, the staff posted to outposts can stay away from the station. An evaluation of the working of the forest stations in different divisions has shown that in general the station system has improved the protection of the forests. At the same time, the concept of outposts as it works today has not contributed to the strengthening of protection work in majority of the cases. It should be remembered that the government orders sanctioning forest stations or the guidelines issued for their operation do not provide for outposts. A detailed guideline with 46 instructions has been issued regarding the functioning, monitoring, supervision, inspection and review of the working of the stations. The performance of the stations has to be supervised by officers at various levels such as Range Officer, Divisional Forest Officer and Conservator of Forests. It is recently observed that in many places the station work has become routine without any review or revision. Therefore, it is felt that there is a need to take a close look at the working of the forest stations. The following recommendations are submitted to make the forest station system more efficient and effective.

Extension of Forest Station System to all Forest Divisions

- 5.5 Out of the 24 territorial divisions and 11 wildlife divisions, section/beat system has been completely replaced by station system in 11 divisions viz., Konni, Ranni, Marayoor, Munnar Wildlife, Malayattoor, Vazhchal, Thrissur, Mannarkkad, Nilambur South, Nilambur North and Wayanad North. Forest Station system has been partially implemented in 9 divisions viz., Thiruvananthapuram Wildlife, Punalur, Kottayam, Kothamangalam, Munnar, Chalakkudy, Nemmara, Silent Valley and Wayanad Wildlife divisions. The replacement of section/beat system with forest stations in the above divisions has resulted in considerable improvement and effectiveness of protection of forest resources in general. Therefore, it is recommended to replace the section/beat system with forest stations in all the divisions in a phased manner. Wherever isolated bits of reserved or vested forests still exist, section/beat system can be continued for their protection.

Rationalisation of Staff Strength in Forest Stations

- 5.6 It is noticed that the staff strength now assigned to various stations has to be rationalized with due regard to the protection and management problems within the station

limits. The following criteria can be adopted for the categorization:

- (i) remoteness
- (ii) accessibility
- (iii) lack of communication
- (iv) nature of terrain
- (v) density and nature of wildlife population
- (vi) gravity of threat from smugglers and poachers
- (vii) extent and value of natural forests and plantations
- (viii) quantum of forestry works
- (ix) man-animal conflicts
- (x) participatory forest management (PFM) activities including ecotourism.

5.7 Each of the above factors can be categorized into three grades namely very difficult, difficult and ordinary carrying three points, two points and one point respectively. Stations can be graded assigning points as detailed above and categorized as per the table below. The standard staff strength is also shown in the table.

Category of Station	Points	Staff strength		
		Deputy Ranger	Forester	Forest Guard
Very Difficult	21-30	1	4	20
Difficult	11-20	1	3	15
Ordinary	1-10	1	2	10

Additional posts required for new forest stations may be created.

5.8 The number of Forest Guards can be increased depending upon the necessity for outposts. But, the outposts can be established only in areas with acute protection problems such as smuggling of sandalwood, rosewood and teak, cultivation of ganja, poaching and illicit brewing. The outposts shall function as protection camps. They shall be established only

with prior written permission of the Principal Chief Conservator of Forests (Head of Forest Force). The necessity for outposts wherever they function now shall be reviewed by the Chief Conservator of Forests in charge of the territorial and wildlife circles and the result shall be reported to the Principal Chief Conservator of Forests (Head of Forest Force) for appropriate decision.

Functioning of the Forest Stations

5.9 The forest stations shall function in accordance with the guidelines already issued. Further, the following guidelines may also be insisted upon:

- (i) the area within the jurisdiction of the stations can be divided into blocks and staff can be assigned protection duties of such blocks for a period of three months. The staff can be rotated every three months by the Deputy Ranger.
- (ii) station staff shall do Friday parade and drill as is being done in police stations to improve efficiency and alertness.
- (iii) the present system of GD and Forest Guard / Forester on station duty shall continue.
- (iv) the Range Officer and the Divisional Forest Officer having supervisory control over the stations shall inspect the station as prescribed in guidelines annexed to the GO (MS) No.77/88/F&WLD dated 15.09.1988 - **(Annexure-14)**. The inspection report shall be submitted to the Chief Conservator of Forests in charge of the circle.
- (v) GIS based monitoring should be introduced.
- (vi) regular and periodic training has to be imparted to the staff for using and properly maintaining arms and ammunitions.
- (vii) maintenance and safe custody of the arms and ammunitions shall be got inspected once in three months by a senior forest officer not below the rank of an Assistant Conservator of Forests and report on inspection shall be monitored and controlled by Divisional Forest Officers.

Equipment and Facilities in Forest Stations

5.10 Every forest station shall be provided with the following equipment and facilities:

- (i) a jeep with four wheel drive
- (ii) a minimum of two rifles with ammunitions, which can be increased depending upon the protection problems.
- (iii) a revolver to the Deputy Ranger wherever protection problems are acute.
- (iv) mobile phones for all staff depending upon connectivity as per the scheme introduced by the G.O (Rt) No.74/11/ F&WLD dated 22.02.2011.
- (v) one wireless set and four to six walkie-talkies
- (vi) two or three personal digital assistance (PDA) to each forest station, so that field visits can be monitored and field data and images can be relayed to head office immediately.
- (vii) one or two GPS
- (viii) two or three sets of binoculars and a digital camera
- (ix) two or three searchlights
- (x) solar lamps and emergency lamps
- (xi) first aid box
- (xii) power chain saw, ropes
- (xiii) rain coats, shoes, sleeping bags and camping materials.
- (xiv) automatic weather stations in selected forest stations.

Infrastructure for Forest Stations

5.11 Every forest station shall be provided with the following infrastructure:

- (i) a station building with sufficient office space, furniture and lock-room facility for safe custody of arms and ammunitions. Necessary facility to safely house the apprehended persons in forest offences till production in courts.
- (ii) a suitable building at protection camps/out stations with camp cots and cup boards.

- (iii) rent free type III quarter for Deputy Ranger and Foresters
- (iv) rent free single room accommodation for Forest Guards and driver
- (v) a store shed for safe custody of thondy materials
- (vi) two steel cup boards
- (vii) a cash chest
- (viii) cooking facility

Other Facilities for Forest Stations

5.12 The following facilities may also be provided to each forest station:

- (i) free ration shall be provided in the protection camps at the rates fixed by the Chief Conservator of Forest's Council.
- (ii) a radio
- (iii) a set of books on laws relating to forests & wildlife, Indian Penal Code, Criminal Procedure Code, Kerala Forest Code, Kerala Financial Code, Kerala Service Rules, Kerala State and Subordinate Service Rules, Kerala Forest Policy, Citizens Charter, all FIB publications such as Aranyam, standard books on forestry, wildlife management, nature conservation, biodiversity conservation, Birds of Kerala, and on nature education and extension, field guides for identification of flora and fauna and such other books and publications which would provide reading materials to the staff during their leisure time to improve their knowledge and skills.
- (iv) facilities for indoor games and outdoor games depending upon the availability of space.

Formation of Disaster Management Squads and Crisis Management.

5.13 Natural disasters such as floods and landslides often occur in forest areas. Similarly, incidents of man-wild animal conflicts are also on the increase. Captive elephants also create problems at times when they are paraded for festivals and processions. There have been many occasions when wild

elephants as well as captive elephants have fallen into wells or deep ditches or got trapped in marshes necessitating immediate rescue operations. Controlling the curious mob is another serious problem in such situations. There have also been several occasions when leopards and poisonous snakes have strayed into human habitations creating panic among the public for days together. Therefore, it is necessary that disaster management squads with one Deputy Ranger, one Forester and three Forest Guards are constituted for the following districts where such incidents occur more often.

- (i) Kannur and Kasaragode with headquarters at Kasaragode.
- (ii) Wayanad with headquarters at Sulthan Bathery.
- (iii) Malappuram with headquarters at Nilambur (South)
- (iv) Palakkad with headquarters at Mannarkkad
- (v) Thrissur with headquarters at Chalakkudy
- (vi) Idukki with headquarters at Painavu
- (vii) Pathanamthitta with headquarters at Konni
- (viii) Kollam with headquarters at Punalur
- (ix) Thiruvananthapuram with headquarters at Thiruvananthapuram.

These squads will function under the direct supervision and control of the Divisional Forest Officer, Kannur; Wildlife Warden, Wayanad; Divisional Forest Officer, Nilambur North; Divisional Forest Officer, Palakkad; Divisional Forest Officer, Thrissur; Wildlife Warden, Idukki; Divisional Forest Officer, Konni; Divisional Forest Officer, Punalur and Divisional Forest Officer, Thiruvananthapuram respectively. The services of these squads can be utilized for protection duties such as eviction of encroachments, survey of forest boundaries, enquiries and patrolling as decided by the Divisional Forest Officers / Wildlife Wardens.

- 5.14 These squads may be provided with rapid response kits, vehicles with search lights and equipment such as tranquilizing guns, blowguns, tranquilizing chemicals, rifles, binoculars, digital camera, GPS, metal detector, wireless sets, walkie-talkies, megaphone, signboards for showing danger

marks, generator, lighting arrangements, microchip reader, rope, power chain saw, cages, climbing rope and other equipment.

- 5.15 At present, when any crisis occurs, the department staff are at the receiving end since they do not have a uniform action plan or protocol or the required resources and equipment. This situation should be changed by developing specific protocols and action plans, which should be made known even to the lowest functionary. The staff should have the telephone number of the Forest Veterinary Surgeon, Assistant Veterinary Surgeon, other veterinary surgeons in the vicinity, police station, fire station, hospital and of the senior officers such as Range Officer and Divisional Forest Officer. The list should be prominently displayed in the room of the officer in charge of the squad. The crisis management squads, range offices in territorial, wildlife, flying squad and social forestry divisions as well as the stations shall also keep equipment for catching snakes, which stray into human habitations. Each station and section shall also be provided with minimum equipment for fire fighting in forest areas such as fire beaters, shovels, knap-sack sprayers, billhook, pick axe, etc. Portable pump sets and three or four rolls of canvas hose shall be made available to each territorial and wildlife range. The digitized map of the areas within the jurisdiction of divisions, ranges, stations and sections shall be displayed in the room of the head of the respective office.

Delegation of Powers for Disaster Management.

- 5.16 Range Officers in charge of ranges, Deputy Rangers in charge of forest stations and Foresters in charge of sections have not been delegated with any power or ready funds to incur expenditure even in emergency situations to manage disasters and emergencies. Range Officers and other field officers are often confronted with emergency situations in the field consequent to death or injury to humans due to attack of wildlife, crop damage by wildlife, loss of dwelling huts and crop in forest fires or floods, death or killing of larger mammals requiring postmortem and burial in forests, injury to staff or mazdoors during fire fighting or rescue operations or performance of other duties. Divisional Forest Officers / Wildlife Wardens, Range Officers, Deputy Rangers and Foresters may be delegated with powers to spend a sum not

exceeding Rs.25,000/-, Rs.10,000/-, Rs.5,000/- and Rs.2,000/- respectively to tackle such emergent situations subject to the condition that such expenditure shall be subsequently got approved by the next higher gazetted officer by getting an estimate or memo of cost sanctioned. The territorial Divisional Forest Officer or Wildlife Warden shall take control of the situation and responsibility for managing the crisis for which he can commandeer the men and resources even from neighbouring divisions, social forestry divisions and flying squad divisions.

Physical Demarcation of Forest Boundaries in Highly Problematic Areas.

5.17 The digitization of forest boundaries shall immediately be followed by physical demarcation of the boundaries by any of the following methods:

- (i) boundary walls
- (ii) elephant proof trenches
- (iii) cairns

5.18 It would also be desirable to establish a green belt of 5-10 metre width. *Agave sisalana* or other suitable species can be used for this purpose.

Maintenance of Vehicles

5.19 Forest Range Officers in charge of ranges and Deputy Rangers in charge of stations are the custodian officers of department vehicles allotted to ranges and forest stations respectively. At present, they have not been delegated with any financial powers for meeting the cost of repairs or fuel charges of the vehicles. The vehicles running in rugged forest roads are likely to develop more frequent troubles and therefore require more frequent repairs. As per existing rules, the repairs of government vehicles can be done only through government approved workshops, which are not available in many forest areas. Therefore, cost of ordinary repairs and service in the nearest available workshops may be permitted to be incurred by the custodian officer to reduce the down time of vehicles and increase efficiency, subject to a limit of Rs.1000/- at a time and annual limit of Rs.6000/-.

Delegation of Powers to Give Rewards to Informants

5.20 Range Officers, Deputy Rangers and Foresters in charge of range, stations and sections may be delegated with powers to

make payment towards rewards to informants subject to a maximum of Rs.5000/- Rs.2000/- and Rs.1000/- per annum.

Circle Level Survey Teams

5.21 The boundaries of Reserved Forest, divisions, ranges, stations, sections and beats have been notified by appropriate authorities according to relevant rules and orders. The boundaries have not been fully demarcated on ground or fully registered on GIS with geo-referencing. Large number of disputes in the field and in the courts of law can be permanently solved if the boundaries are geo-referenced and published as authentic records of the government. For this purpose modern equipment such as total stations and differential GPS can be used. Though there is a Mini Survey Unit in the Kerala Forest Department, manned by officers on deputation from Survey and Land Records Department, the progress of work is very slow. The officers from Survey and Land Records Department work according to a norm for turn over of works fixed by that department which is only 1.2 survey stations per day. At this rate, survey of Reserved Forest boundaries will take many years to complete, with the available staff from Survey Department. Hence it is recommended to constitute special survey units at circle level with the following composition:

- (i) a Forester and two Forest Guards trained in the use of modern survey equipment.
- (ii) two persons qualified in survey and use of modern survey equipment.

5.22 Each unit should also have the following equipment, which should be purchased with warranty & annual maintenance contract:

- (i) differential GPS with total station 2
- (ii) handheld GPS 1
- (iii) measuring tapes

5.23 Qualified personnel passed out from recognized survey schools should be engaged on contract basis for each work.

5.24 Training to use the modern equipment should be imparted using the services of original equipment manufactures or their authorized agents or franchisees. The components for training

and annual maintenance contract should also be included in the package for purchase of modern equipment.

Forest Minister's Relief Fund

5.25 At present there is considerable delay in the payment of compensation to the victims of wildlife attacks, after completing all formalities and obtaining legal heirship/succession certificate. If the amount is disbursed in advance pending completion of all formalities, the legal heirs will not be interested in submitting the required documents. Shortage of funds is another issue leading to delay in disbursement of compensation. In order to avoid such problems it is recommended to:

- (i) constitute a Forest Minister's Relief Fund which will function in the pattern of a contingency fund, with provision to accept grants and contributions in order to disburse amounts of compensation to victims of wildlife attack.
- (ii) simplify the procedures required for disbursement of the amount as follows:
 - (a) only legal heirship certificate issued by revenue authorities need be insisted irrespective of the amount of ex-gratia payment for death.
 - (b) fifty percent of the ex-gratia payment can be given as advance payment based on certificate issued jointly by Village Officer and President, Grama Panchayat.

Protection Camps in Highly Problematic Forest Areas

5.26 Protection camps shall be established with the approval of Principal Chief Conservator of Forests in problematic forest areas with safe camping facilities. The camping area shall be secured by elephant proof trenches and the camping facilities such as temporary sheds or tents, camp cots, sleeping bags, rain coats, binoculars, GPS, wireless sets, arms and ammunitions. Facilities for cooking for staff and mazdoors should also be provided.

Ration and First Aid Boxes in Protection Camps

5.27 Free ration shall also be provided for the staff and mazdoors deployed to protection camps in the interior forest areas in territorial divisions, sanctuaries and National Parks at the following rates:

Rice/wheat	:	500 gm / camping day / head
Pulses	:	200 gm / camping day / head
Vegetable oil	:	100 gm / camping day / head
Kerosene	:	as per requirement

5.28 First aid boxes with adequate medicines and other articles shall also be provided to all protection camps.

Stock of Anti-Venom in Each Division

5.29 Snake bite is quite common in Kerala especially in rural and forest areas. A considerable number of persons including forest officers get affected. Unless timely medical care is given, many snake bites would become fatal. Availability of anti-venom in time in the nearest hospital is the crucial factor to save the lives of people bitten by snake. It is often noticed that sufficient stock of snake venom is not normally available in many rural health centers/dispensaries. Therefore, sufficient quantity of anti-venom shall be procured by the Divisional Forest Officer and supplied to the nearest primary health centers, government dispensaries, taluk hospitals and district hospitals. The territorial Range Officers and Assistant Wildlife Wardens having jurisdiction over the area shall consult with the medical officers in charge of the primary health centre/hospital to ascertain availability and requirement of anti-venom and inform Divisional Forest Officer / Wildlife Warden accordingly once in a month. This will not only save the lives of persons bitten by snake but would also save government money which otherwise will have to be paid as compensation to the victims of snake bite at a rate of Rs.1 lakh.

Effectiveness of Check Posts

5.30 There are 31 check posts, which were established in the past mainly for checking the movements of timber and other forest produce. Since selection felling and clear felling have been stopped, the movement of timber and firewood from natural forest areas has been completely stopped. Nowadays, timber is extracted only from teak wood plantations and pulp wood

plantations. Government have also liberalized the regulations on transport of timber and firewood by enactment of The Kerala Promotion of Tree Growth in Non Forest Areas Act, 2005. The nature and gravity of forest and wildlife offences have also undergone changes. Therefore, the effectiveness of functioning of check posts at the present stations will have to be studied and appropriate action taken to retain or relocate them or to convert them into mobile units.

CHAPTER VI

APPLICATION OF MODERN TECHNOLOGY

- 6.1 Information and Communication Technology (ICT) has opened up tremendous possibilities of radically different information exchange patterns by facilitating faster and more efficient collection, storage and dissemination of information. It can play a vital role in ensuring a high level of transparency and accountability in governance. E-Governance initiatives help the department get the benefits of advancement in information and communication technology. During the recent years, more and more government departments are adopting e-governance for delivering faster and better quality services through modernization process and incorporating better delivery mechanisms. Modern technology has been extensively used for efficient management and protection of forest in all developed countries. It is being introduced and implemented in developing nations as well. In view of the steep terrains and complex eco-systems on the slopes of the Western Ghats, there may be certain limitations to the application of modern technology in various issues relating to management and protection of forests.

Internet Facilities Down to Range Offices

- 6.2 Computerized data processing and use of GIS have been introduced in the department. Modern communication facilities such as mobile phone and internet have also been introduced in the department. All the officers down to division offices and some range offices have been given internet facilities. The internet facilities shall be extended down to range level completely so that data can be collected for computerized processing at the point where data is generated. Government of Kerala have introduced Kerala State Wide Area Network (KSWAN) for giving connectivity to government offices. This facility can be utilized for networking various offices of the department.

Video Conferencing Facilities

- 6.3 The facility for video conferencing can also be introduced in offices down to division offices in the first phase. The government have introduced video conferencing facility in all district headquarters. This can be used by the department also for getting introduced to the system. This will reduce the

requirements of officers coming all the way to the forest headquarters for short discussions.

GIS for Management and Protection of Forests

6.4 The Geographic Information System (GIS) has been introduced in Kerala Forest Department to improve the management of our invaluable natural resources. The reserve boundaries, division boundaries, range boundaries, station boundaries and section boundaries have been digitized and the maps have been made available to each division through internet facilities. Various themes such as types of natural forest, plantations, soil, terrain, watersheds, river basins, hydrology etc., can be overlaid on these boundaries to assess the quality and quantity of natural resources within the jurisdiction of each administrative unit. The services of scientists from Kerala Forest Research Institute (KFRI), Tropical Botanic Garden and Research Institute (TBGRI), Centre for Water Resource Development and Management (CWRDM), Centre for Earth Sciences Studies (CESS), Institute of Forest Genetics and Tree Breeding (IFGTB), National Natural Resources Management System (NNRMS), Forest Survey of India (FSI), Kerala State Land Use Board (KSLUB), Kerala State Remote Sensing Centre (KSREC), etc., can be used to improve the application of GIS in the management of forests and plantations. GIS can also be used for monitoring the changes in the ecosystems and in the pattern of distribution of biodiversity. Timely and accurate detection of the change of earth's surface features provides the foundation for better understanding of the relationships and interactions between human and natural phenomena to manage and use natural resources better. Large scale changes in land cover and continuous monitoring of forests have popularized remote sensing technology as an essential tool. Initiatives to monitor land cover and land use change are increasingly reliant on information derived from remotely sensed data. Such information provides inputs to understand the human processes behind deforestation. The change in forest cover will be detected by comparison between two or multiple date satellite images or between old maps and recent remote sensing images. The National Natural Resources Management System (NNRMS) under Indian Space Research Organisation (ISRO) may be consulted to improve the use of modern techniques of GIS for better and effective management of forests and plantations.

Detection of Ganja Cultivation Using Remote Sensing

- 6.5 Ganja cultivation in forest areas is a menace to conservation of forests and wildlife in many ways. There is information to the effect that extremists might try to intensify their activities in the forest areas, especially among tribals. Therefore, it would be desirable to make a permanent arrangement with Navy or Air Force for an aerial inspection using helicopters at an interval of one month. A system to monitor forest areas for short-listing areas supporting ganja cultivation may be developed utilizing the expertise from NNRMS under ISRO.

Fire Monitoring Using GIS

- 6.6 A fire monitoring system has been introduced in the department by which forest fires over an extent of and above two hectares can be detected and located using MODISH satellite of NASA which will provide the latitude and longitude of the fire site. The GIS unit at forest headquarters, Thiruvananthapuram will immediately communicate to range office and divisional forest offices, the exact location of the forest fires with its latitude and longitude. The range staff immediately takes necessary action to put out the fire, if not already done, and fire reports are submitted to higher authorities as prescribed. This system can be made more effective and regular by proper computerized monitoring so that reports can be watched at forest headquarters. The fire data can also be compiled and analysed on a long term basis to update the list of more fire prone areas in the state.

Fire Risk Zonation Mapping

- 6.7 One of the main causes of degradation of forest is forest fire. Proper information on forest fire prone areas is necessary for preplanning, prevention and control of forest fires. Use of satellite data and GIS tools in forest mapping has been successfully used in forest fire control. The factors influencing forest fire are categorized into fuel (forest type), topography (slope and aspect) and proximity (roads and settlements). These major components need to be evaluated by mapping and showing their inter relationship, describing status of forest wealth and finally integrating these parameters for identification and zonation of fire prone areas from lowest to highest risk. This can be done for the entire forest area in the

state using satellite remote sensing and GIS as tools for mapping the fire risk zones.

Use of Free and Open Source Software (FOSS)

6.8 As already indicated the Forest Department is one of the departments selected by the government for total computerization. In early 1990s the process of computerization had commenced in the department. As a scheme under the World Bank Aided Kerala Forestry Project 17 modules were developed for use in the department. The use of these modules has not become as effective as it should have been. The Personnel Information System module has been now replaced by the module namely SPARK introduced by the government for the personnel management in all departments. In view of the decision of the Government of Kerala to use FOSS, the department has decided to convert the above 16 modules to platform of FOSS. Three out of the 16 modules have been entrusted with KELTRON for this purpose. It is anticipated that conversion of the modules namely, court case monitoring system, fire protection system and offence information system into FOSS platform would be completed within ten months. The other modules may also be converted without any delay. All the staff especially the staff of Statistical wing and statistical compilers in divisions and circles should be given proper training to use such modules.

Demarcation of Forest Boundaries and Incorporation in GIS

6.9 The boundaries of Reserved Forest had been notified many decades back. The boundaries have undergone changes in places where there have been encroachments. Large areas of forest land had been leased out to departments and institutions such as Water Resources Department, Kerala State Electricity Board, Plantations Corporation of Kerala, Rehabilitation Plantations Ltd., Oil Palm India Ltd., State Farming Corporation of Kerala Ltd., Malabar Cements Ltd, and to other public sector undertakings. Large extent of forest areas were assigned under grow more food scheme and various colonization schemes after World War II and Independence of India. Encroachments prior to 01.01.1977 have been regularized in different stages. An extent of 28588 hectares of encroachments in forest lands in various districts have been regularized as per the provisions of The Kerala Land Assignment (Regularization of Occupations of Forestlands prior to 01.01.1977) Special Rules, 1993. It is

also noticed that the encroachments on or after 01.01.1977 have not been fully evicted. The above changes in the extent and boundary of forest lands, which happened after the notification of reserved forest, have not been incorporated in the maps. Therefore, it is highly necessary that the boundaries of the Reserved Forests as per the notification and the boundaries of forest areas diverted for non forestry purposes are surveyed, demarcated and digitized. A special project to survey the entire forest land under different land use may be formulated and implemented using modern equipment such as total stations, differential GPS and computers with necessary softwares.

Radio Collaring Technique to Manage Man-Animal Conflict

6.10 It has been reported that radio collaring techniques are used to track animals in the forest. Certain non-governmental organization like World Wide Fund for Nature – India (WWF) and Wildlife Trust of India (WTI) have indicated that radio collaring techniques can be used to track crop raiding elephants and rogue elephants so that the people and wildlife managers can take effective steps to drive them away or for rescue operations or for planning and implementing schemes to mitigate man-animal conflicts. This technique may be introduced on experimental basis to track the crop raiding elephants in the areas where acute problems of man-animal conflict exist.

Crisis Management Units

6.11 Man-animal conflict is an aggravating problem. Attack by wild animals on human beings causing injury and death, wild animals straying into human habitations and private plantations, rescue operations of wild animals fallen in ditches or trapped in marshy places etc are emergencies which forest officers have to face frequently. It is recommended that crisis management units may be set up with a rapid response kit consisting of the following equipment:

- (i) one jeep
- (ii) two motorcycles
- (iii) mobile wildlife rescue vehicle
- (iv) solar charging system
- (v) solar lamp / solar torch

- (vi) shoe, gum-boot, sweater, jacket, raincoat
- (vii) injury proof trap cage for tiger/leopard
- (viii) water filter
- (ix) LP gas and stove
- (x) anti-poaching patrolling kit with tent, sleeping bag, backpack, torch, raincoat, trekking shoes, first aid kit, compass, metallic tape, rope etc.
- (xi) canvass backpack
- (xii) metal trunk
- (xiii) metal cot
- (xiv) mosquito net
- (xv) bucket and water storage tank
- (xvi) metal detector
- (xvii) search light
- (xviii) GPS
- (xix) megaphone
- (xx) camera, binoculars
- (xxi) portable generator set

Wildlife Census Using Modern Techniques

- 6.12 Camera trap method has been introduced for tiger census, which can be effectively used for monitoring the population of tiger and other large mammals. This method may be made more informative by adopting systematic statistical sampling. Further, the wildlife census using modern techniques may be organized every year in such a way that two separate and distinct landscape units are covered at regular intervals of five years in rotation.

Wildlife Forensic Facilities

- 6.13 A wildlife forensic lab has been a long felt need for identifying wildlife articles scientifically for successful investigation and prosecution of wildlife offences. Periodic monitoring of health conditions and detection of infectious diseases among the wildlife population are also equally important. It is informed that Wildlife Institute of India, Dehradun; Kerala Agricultural University, Mannuthy, Thrissur and Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram have facilities for DNA

bar coding. This technology can be effectively used for detecting and identifying tigers precisely and accurately and for investigation and prosecution of wildlife offences. Periyar tiger reserve has been proposed as a learning centre of Wildlife Institute of India under the project for Biodiversity Conservation and Rural Livelihood. When this project is implemented, the facilities in the learning centre can be utilized for imparting training to wildlife managers at local level on the use of modern techniques in wildlife management.

Grading and Certification of Seeds

- 6.14 Proper selection and grading of good quality seeds is a prerequisite for raising better quality plantations. A seed centre for grading and certification of seeds was established at Kerala Forest Research Institute (KFRI), Peechi. The department had provided necessary financial assistance for setting up the said seed centre, which was hitherto kept under dual control of KFRI and Kerala Forest Department. The seed centre being an institution under KFRI, Peechi it would be more ideal for scientists to manage the seed centre effectively. Therefore, the management of the seed centre has been transferred to KFRI. The facilities for testing and certification of seeds in the seed centre at KFRI should be modernized and improved for which financial assistance may be provided. It shall be made mandatory that only graded and certified seeds shall be used for production of quality planting materials in the department.

Improvement of Central Nurseries

- 6.15 There are five central nurseries where modern technology such as mist chamber, root trainers etc. are used for large scale production of good quality planting materials (ramets and seedlings). The functions of these central nurseries may be upgraded and production of ramets and seedlings may be increased, using modern technology. A technically qualified person may be engaged on contract in each nursery as a part of the project to produce better quality planting materials. A demonstration plot of medicinal plants and other important tree species shall be raised as a part of the central nursery.

Permanent Monitoring Plots with Automatic Weather Station

- 6.16 Monitoring biodiversity and carbon sequestration potential of the forest has been gaining importance in the recent years.

Institutions such as Forest Research Institute (FRI), Dehradun; Forest Survey of India (FSI), Dehradun; Wildlife Institute of India (WII), Dehradun; Centre for Ecological Sciences, Indian Institute of Science, Bangalore etc., can be consulted to lay permanent plots in the forest areas for monitoring biodiversity and carbon sequestration potential. This type of long term monitoring plots can be laid out in different types of forests based on statistical principles. Weather data such as rainfall, temperature, humidity and wind velocity are of vital importance since they have a bearing on the general health of forests and also in the prediction of forest fire. Weather data available in the department are not fully collected from representative forest areas. The department collects data from the sister departments which have weather data pertaining to areas outside forests. Hence, there is a lack of weather data pertaining to the forests of Kerala in the department. So automatic weather stations shall be installed in consultation with the India Meteorological Department in the permanent monitoring plots to be identified in all forest divisions with the facility of data logger and user friendly system with uninterrupted power supply with solar power panel and batteries. Permanent weather stations shall also be installed in selected forest stations.

Website and Web Portal

- 6.17 The department has to maintain transparency, accountability and professionalism which are the most important features to be infused into any public organization to make it more efficient and people friendly. The duties and functions of the forest officers have increased manifold and their field of activity has expanded to non-forest areas also. The objectives of forest management have moved more towards conservation of biodiversity and optimization of ecological services. In view of the problems of global warming and climate change, the department has to take pro-active steps to mitigate their deleterious effect for which information has to be disseminated among people and their co-operation has to be enlisted.
- 6.18 The department has brought out a Citizens' Charter explaining the services that can be obtained from the department. The implementation of the Right to Information Act has cast on the department the responsibility for proper maintenance and

upkeep of all records so that information can be made available to the public. For achieving the objectives cited, the website of the department has to be continuously updated. The department has started a web portal in which important documents are being uploaded for the benefit of the officers and the public. There is a very large number of documents of contemporary and historical importance now available in various offices of the department. A project may be formulated and implemented using funds from XIII Finance Commission Award or from other sources to enrich and update the website and web portal of the department engaging experts in the field. It is informed that the website can be made remunerative if services like online booking for the facilities in sanctuaries and National Parks can be provided to the public. Such options may also be explored in consultation with experts in the field.

Software Development Needs

- 6.19 Statistical data play a very important role in any scientific decision-making process relating to management of natural, financial, human and material resources. For effective collection and processing, the data shall be captured systematically at predetermined intervals from where the data originate. Therefore systematic data collection shall have to be arranged at range and division level, so that preparation of monthly accounts, annual accounts, administration reports, forest statistics etc. can be completed in time without any extra effort.
- 6.20 There are more than 10,000 applications from sawmills and wood based industrial units for no objection certificates (NOC) to be issued in accordance with the directions of the Hon'ble Supreme Court and the Central Empowered Committee. A permanent database is required in respect of sawmills and wood based industries to facilitate issuance, renewal and cancellation of NOC and such other processes. Similarly, there are more than 700 captive elephants in the state for which possession certificates and transit permits have to be issued. A permanent database for captive elephants would enable the authorities and the owners of the elephants to process applications in respect of captive elephants without undue delay.

6.21 Permanent records have to be maintained by the department in respect of reserve notifications, vested forest notifications, leases, committee reports, important judgments, important government orders and circulars. Such documents can be stored as soft copies in the web portal. They can be categorized and arranged chronologically for easy access and retrieval.

6.22 Therefore it is recommended that a permanent database may be developed and updated periodically. A few important aspects on which data base has to be developed are:

- (i) forest types
- (ii) forest soils
- (iii) water resources
- (iv) growing stock
- (v) particulars of plantation
- (vi) weather parameters
- (vii) forest fires
- (viii) forest offences
- (ix) revenue
- (x) expenditure
- (xi) human resources
- (xii) vehicles
- (xiii) arms and ammunitions
- (xiv) communication systems
- (xv) roads and bridges
- (xvi) buildings
- (xvii) tribal settlements
- (xviii) vested forests
- (xix) ecologically fragile lands
- (xx) wildlife census
- (xxi) parameters for long term monitoring of biodiversity
- (xxii) social forestry activities.
- (xxiii) sacred groves
- (xxiv) mangroves
- (xxv) protected areas
- (xxvi) corridors

- (xxvii) encroachments
- (xxviii) geo-references of the boundaries of Reserved Forests, vested forests, ecologically fragile lands, divisions, ranges, stations, sections, beats, sanctuaries, National Parks, plantations and settlements and of the roads, bridges, buildings, protection camps etc.

Modernisation of Library

- 6.23 The department has a library at the forest headquarters. Though the number of modern books and publications on forestry available in this library is only few, there are several invaluable old books and publications which are of scientific and historical importance. It is absolutely necessary that these books and documents have to be preserved. Light, heat, humidity, pollutants, insects, rodents, etc. are the major factors contributing to the deterioration of the books and publications. Hence protective measures have to be adopted for the preservation of old books and publications. All books and publications which are to be preserved on a permanent basis can be microfilmed or digitized.
- 6.24 The books in the library have been classified in accordance with Oxford decimal classification (ODC) scheme and Dewey decimal classification (DDC) scheme for forestry books and general books respectively. It is noticed that the safe custody and distribution of books are not being done quite systematically. The available books and publications have to be inventoried using LIBSOFT software and bar coded. The library should also be modernized by computerisation and enriched by purchase of books and publications on modern aspect of forestry, wildlife management, biodiversity conservation, environmental science, environmental law and other related subjects. There should be books and publications on general subjects as well. A computer dedicated to management tasks (check-in, check-out, cataloging, etc.) should be installed at the librarian's desk along with a bar code wand and printer capable of producing bar coded labels. The distribution of books should also be regulated systematically using software. Reprography section also needs to be set up in the library so that important documents can be copied in the library itself without taking the documents out of the library.

- 6.25 Video library on forestry and wildlife should also be set up in the central library. Movies and documentaries in the form of CD/DVD need to be procured from various agencies from India and abroad, catalogued properly and safely preserved. The CDs can be lent to the staff in the department and students on furnishing proper security. Facilities including LCD projection system for watching rare movies may be set up in the central library itself. A reference library and reading room can also be established. There is a children's library section, which should also be improved by addition of more books, CDs, DVDs and publications.
- 6.26 At present there is only one Librarian qualified in library science, on deputation to the department from the common pool of librarians from higher education department. For the improvement and maintenance of a good library additional staff will be required. One person qualified in library science and a technical hand in bookbinding would be absolutely necessary for the maintenance of the library. Sufficient funds for the modernization of the library can be made available under the budget heads for wildlife conservation or biodiversity conservation or extension or XIII Finance Commission Award or such other budget heads. A project for modernizing the library can be formulated in consultation with experts and can be implemented.

Modernisation of records room

- 6.27 Records rooms have been maintained in the offices down to range level. Almost 250 offices in the department are having records room for keeping and maintaining old records that are to be retained for long period. The maintenance and preservation of records are not being done systematically in many of the offices. The existing records available in the records rooms need to be inventoried and catalogued with the help of a computerized system.
- 6.28 Paper documents need protection from a variety of elements which contribute to their deterioration viz., light, heat, humidity, pollutants, fungus, insects, rodents, etc. Hence protective measures have to be adopted for the preservation of old records. All important documents in the records room can be microfilmed or digitized. Proper retrieval system of

documents and files using computers is also needed for the modernization of records room. Necessary fire extinguishers are to be maintained. Vacuum cleaners in order to have a dust free environment and masks need to be supplied.

- 6.29 Old records and documents are getting accumulated in many offices occupying space and causing allergic problems to staff. Disposed files and unwanted documents and records, should be destroyed as per rules at regular intervals after proper examination by the authorities of Department of Archives. For the destruction of unwanted old records shredders have to be procured and supplied to all the records rooms. The records rooms are being managed by the departmental staff who are not trained in dealing with such responsibilities and hence necessary training on record management shall be provided to the staff. The Department of Archives has offered technical support and advice for the scientific arrangement of documents and files, their preservation in the records rooms and also for devising a proper retrieval system. Sufficient funds for modernization of records rooms can be made available under the budget heads for extension or XIII Finance Commission Award or such other budget heads.

Modernisation of Offices up to Range Level

- 6.30 Computers have been procured and supplied to all offices of the department down to range level. The department is gradually migrating the modules developed by RITES India Ltd. from Oracle to Free and Open Source Software (FOSS) in compliance with IT Policy of the state government. This will facilitate on-line data entry and compilation of data at headquarters as and when data are entered in the field offices. For enabling this, the field offices are required to be equipped with sufficient computers and laptops with all accessories and softwares. Internet facilities need to be provided in all offices down to range level. Cable internet connection for high speed web browsing from BSNL has already been provided to all offices down to division level and most of the offices down to range level for the implementation of SPARK and on-line data entry in forest management information system (FMIS) modules. Local area network (LAN) has also been provided down to the division offices. The entire computers in LAN have to be integrated within a wide area network (WAN) for which services of Kerala State Wide Area Network (KSWAN) provided by Kerala

State Information Technology Mission (KSITM) can be utilized.

- 6.31 Official mobile SIM cards from BSNL have been issued down to Forest Guards and Head Accountants. This can be further utilized for strengthening m-governance (mobile-governance) initiatives of the government, which aim at utilizing the impressive tele-density levels in the State of Kerala.
- 6.32 Information and data exchange advance system (IDEAS), an advanced file information system to track files of the offices of the government shall be implemented in all offices using the services of Kerala State Information Technology Mission (KSITM). This would also enhance the efficiency of the offices in handling files and implementation of Right to Information Act since it enables file tracking both by officers and by public through internet.
- 6.33 Official e-mail IDs have been given down to timber sales depots of the department and their use by all the concerned shall be insisted in order to accelerate transmission of official communications.
- 6.34 Offices located in remote forest areas most often suffer from frequent power failures resulting in delayed and late transmission of communications. Therefore, installation of solar power system in all such offices would ensure uninterrupted supply of power enabling smooth transfer of communications.

Modernization of Forest Museum

- 6.35 The department has a forest museum. It has enough scope for improvement. It is recommended that the forest museum may be improved engaging experts in the field so that it would become a centre for natural history education.

CHAPTER VII

INFRASTRUCTURE NEEDS FOR MODERNISING FOREST MANAGEMENT

- 7.1 Development of infrastructure is a pre-requisite for all other developmental activities. Kerala Forest Department is responsible for managing the forest resources spread over about 29% of the land area of the state. It also undertakes production of timber in about 1.48 lakh hectares of forest plantations. These are arduous tasks requiring careful planning and implementation.
- 7.2 The menace of grave crimes such as poaching of elephant and tiger, trading in wild-animal-based articles, smuggling of sandal wood and snake venom, ganja cultivation and illicit brewing should be prevented effectively. Forest fires have to be detected and put out in time to save the natural forests, plantations and wildlife. In view of the paucity of labour, mechanization will have to be introduced in a phased manner in forestry practices especially in raising and maintenance of plantations as well as logging and transportation. Forest consolidation by survey and demarcation of the forests has to be expedited using the modern technology and satellite imageries. Unless minimum infrastructure facilities are available in the forest area, it would not be possible to achieve the above objectives. The infrastructure facilities required in forest areas can be classified as follows:

- (i) roads
- (ii) buildings
- (iii) transportation
- (iv) communication

Roads

- 7.3 There are a large number of forest roads of various grades, the total length of which would come to more than 4500 km. They fall into the broad category of blacktopped, metalled and other types, the length of which is 377 km 866 km and 3269 km respectively. The length of the motorable road is 3882 km and that of non-motorable is 630 km. These roads were originally constructed as fair weather roads for the purpose of extraction of timber. Many forest stations and camp sheds get cut off during rainy season for want of well-maintained forest

roads. There is severe shortage of funds for maintenance of roads and buildings as can be seen from the following data.

Year	Allotment for roads (Rs.in lakhs)		Allotment for buildings (Rs.in lakhs)	
	Plan	Non-plan	Plan	Non-Plan
2005-06	150.00	14.00	325.00	42.55
2006-07	10.00	25.65	130.00	74.35
2007-08	30.00	21.08	200.00	56.00
2008-09	100.00	25.00	160.00	70.75
2009-10	100.00	27.50	160.00	70.75
2010-11	100.00	27.50	225.00	70.75

- 7.4 The forest roads are prone to severe damage during rainy season. They become unfit for transportation due to erosion, formation of gullies, landslides and due to damage to culverts, causeways and bridges. Therefore allotment of funds for the maintenance of roads has to be increased considerably to make at least the most essential portions of the forest roads fit for transportation.

Buildings

- 7.5 At present, there are more than 2700 buildings in the department falling into categories of office buildings, camp sheds, forest stations, quarters, inspection bungalows, dormitories and community halls. All these require regular and proper maintenance. The requirement and cost of repairs of these buildings in forest areas will be much more due to adverse climate conditions and remoteness of the areas. But the allotment of funds for repairs and maintenance of buildings is grossly inadequate to meet even the minimum requirements as can be seen from the data given above. Unless maintained in time, all these buildings are likely to deteriorate. Therefore, the allotment of funds for maintenance of buildings should be increased commensurate with the requirements.
- 7.6 The accommodation facilities now available to the protective staff posted in forest areas are grossly inadequate. It is a known fact that buildings will not be available on rent in forest areas. At present, there are only about 280 quarters for the Foresters and 249 quarters for the Forest Guards,

whereas their total strength would work out to more than 3000. Therefore most expeditious action has to be taken in a phased manner to provide free accommodation facilities to all the officers posted in the field, either in the form of single room accommodation or in the form of separate quarters depending upon the requirement in each area. While constructing the buildings, the following guidelines shall be followed:

- (i) All forest stations shall be provided with buildings with facilities for storage of arms, ammunitions and other equipment and for storage of valuable thondy articles.
- (ii) All protection camps shall be provided with requisite buildings for the stay of the staff and protection mazdoors. The camp site shall be protected with elephant proof trenches. In view of the difficulty to transport building materials such as rubble, sand and cement, pre-fabricated steel structures can be designed and used.
- (iii) All ranges and divisions shall be provided with office buildings with proper store, record room and computer room. Wherever facilities for proper store, records rooms and computer rooms are not available, these shall be constructed immediately.
- (iv) Residential colonies should be established in selected locations at range or division headquarters for the stay of the families of employees who are posted in remote forest stations.

Repairs and Maintenance of Roads and Buildings

7.7 It is the experience in the department that registered PWD contractors would not be available to take up small civil works in remote forest areas. Further, as per the present norms in PWD, no tender excess is permissible. But increase up to 50% in the labour rates is permissible for works in remote areas. If repairs of buildings and roads in remote forest areas have to be done in time, the following procedure has to be adopted:

- (i) Range Officers may be given powers to sanction the estimates for the repair works of buildings under

their administrative control subject to a ceiling of Rs.25, 000/- per building.

- (ii) Divisional Forest Officers may be authorized to grant increase in labour rates up to 50% and sanction estimates for repairs of buildings and roads in remote forest areas under their jurisdiction.
- (iii) Range Officers may be authorized to execute the repair and maintenance works of buildings and roads in forest areas using local labour at estimate rates after inviting local quotations.

Transportation

- 7.8 In view of the fact that the public transport system, if any, in forest areas is grossly inadequate and that the organized gangs engaged in grave crimes move with modern vehicles, equipment and weapons, all the divisions, ranges and forest stations in territorial and wildlife divisions shall be provided with four wheel drive jeeps.
- 7.9 Motorcycles are quicker means of transportation and they have been supplied to many forest stations and other field offices. It has been noticed that the motorbikes supplied to field offices are not fully and continuously utilized since all the officers posted to the station and other field offices on transfer need not necessarily be experts or confident in riding motor bikes. Therefore, a different system of allotment of motorbikes has to be implemented. The motorbikes should be supplied to an officer, who would actually ride and maintain the bike. When he is transferred, it can be taken by him to his new station for performance of his official duties.
- 7.10 All flying squad divisions and flying squad ranges shall be given a four-wheel drive jeep for each unit. All flying squad ranges shall be given two motorbikes for expediting enquiry.
- 7.11 All social forestry divisions may be given a car or a jeep and social forestry ranges shall be given a jeep with trailer. The social forestry ranges may also be given one or two motorcycles depending on necessity.
- 7.12 The Assistant Conservators of Forests of extension units, Director, Forestry Information Bureau, Deputy Directors of Wildlife Education, who are given independent charge of interpretation and education in the protected areas may also be provided with a jeep each.

- 7.13 Research division and working plan divisions shall also be provided with a four-wheel drive jeep each.

Maintenance of Vehicles

- 7.14 It is needless to point out that vehicles running along forest roads will require frequent repairs and maintenance. If the vehicles in divisions, ranges and forest stations have to be towed down all the way to an approved workshop and have to be inspected and certified by the engineer of mechanical engineering division, Public Works Department (PWD) for even minor and day-to-day repairs, it would result in inordinate delay and extra expenses. Therefore, the custodian officers of vehicles such as Deputy Rangers in forest stations, Range Officers in ranges and DFOs in divisions located in remote areas shall be authorized to get the minor repairs done in the nearest available workshop subject to ceiling of Rs.1000/- at a time and of Rs.6000/- annually.
- 7.15 The procedure now followed for special repairs of vehicles needs a modification for effective functioning. The delegation of power for special repairs at present is Rs.25,000/- for Principal Chief Conservator of Forests. As per the procedure prescribed by government, the vehicle for special repairs shall be garaged in a government approved workshop and the fact intimated to the Assistant Executive Engineer (AEE) / Executive Engineer (EE) of mechanical engineering division of Public Works Department. The government approved workshop prepares an estimate for repairs and for replacement of spare parts. The AEE/EE of mechanical engineering division of PWD inspects the vehicle and certifies the essentiality of works and of spare parts. The estimate for special repairs is prepared as per the certificate issued by the AEE/EE and work is executed accordingly. The works are inspected and the bills are certified by the AEE/EE for payment. Special repairs will be allowed by AEE/EE only if the vehicle can be repaired economically. Thus, there is no decision to be taken by any forest officer in the process of special repairs of vehicle. Hence, officers of and above the rank of Assistant Conservator of Forests may be given powers to sanction estimates, execute works and make payments for special repairs of vehicles provided, the works are got done in approved workshops after due inspection and certification by the AEE/EE of Mechanical Engineering division of PWD.

Replacement of Old and Unserviceable Vehicles

- 7.16 In view of the difficult terrain in which the vehicles run in the forest areas, the vehicles should be condemned on completion of 10 years or two lakh kilometers of running, whichever is earlier.

Communication

- 7.17 Government as per G.O(Rt) No.74/11/F&WLD dated 22.02.2011 have ordered to provide mobile phones under Closed User Group (CUG) system to all officers down to the grade of Forest Guard in order to improve the protection work. This scheme is under implementation. PDA with facilities of cameras, GPS and better communication facilities shall be supplied to each range and forest stations in territorial and wildlife divisions and in flying squad divisions. Since mobile phone facilities are provided to the ranges and stations, the PDAs can be used effectively for collection and communication of vital information.

CHAPTER VIII

CONSERVATION OF FORESTS AND WELFARE OF TRIBALS

- 8.1 Forest dwelling tribals are intrinsically and inseparably related to the forests where they live. Their culture, social customs, rituals, lifestyle and means of livelihood are largely dependent on forests. Tribals maintain a symbiotic relationship with forests.
- 8.2 The strategy for forest conservation has undergone drastic changes during the last three decades. Joint Forest Management (JFM) has been vitally accepted as a better strategy for conservation of forests and the biodiversity therein. It is a strategy in which benefits from forests are shared with forest dependent communities consisting mainly of tribals in reciprocation of their involvement and input to forest conservation.
- 8.3 The tribal economy is also intimately linked with forests. It is characterized by marginal holdings of forest land, primitive agricultural practices, low agricultural productivity, seasonal collection of non-wood forest produce (NWFP), poor facility for processing, storage and marketing of NWFP, poor facilities for health care and education, seasonal availability of labour, seasonal and low income and poor living conditions.
- 8.4 According to 2001 census there are 364189 persons belonging to 35 tribal communities in Kerala, out of which, 73492 are forest dwellers.
- 8.5 Major problems impeding the developmental activities for providing primary amenities to tribals are:
- (i) poverty
 - (ii) lack of proper housing and sanitation
 - (iii) unemployment/under-employment
 - (iv) illiteracy and lack of education facilities
 - (v) primitive cultivation practices
 - (vi) poor processing and storage facility of NWFP
 - (vii) poor marketing of NWFP
 - (viii) poor facilities for health care and sanitation
 - (ix) lack of electric supply
 - (x) lack of water supply

(xi) indebtedness

- 8.6 The Tribal Development Department is the nodal department, which implements tribal development programmes in the state. Various departments such as forests, health, water resources, education, PWD and governmental agencies such as Housing Board, Rubber Board, Nirmithi Kendra, KSEB and Kerala Water Authority also participate in the implementation of tribal development programmes in forest areas using their own funds or availing funds from the financial institutions, tribal development department or from Government of India.
- 8.7 For the last several decades, the Forest Department, with the approval of the Government of Kerala has been allotting the right to collect NWFP free of cost from the entire forest area to the tribal communities. In order to ensure reasonable price through better marketing, tribal co-operative societies have been established under the department of co-operation. Professionals from the department of co-operation function as secretaries to the tribal co-operative societies. These societies give advances to tribals required for collecting the NWFP and procure NWFP collected by the tribals at reasonable prices. There is an apex body namely Kerala State Federation of Scheduled Castes and Scheduled Tribes Development Co-operatives Limited, Thiruvananthapuram for coordinating the activities of the tribal co-operative societies and for ensuring better marketing of NWFP.

Implementation of Forest Rights Act

- 8.8 The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, popularly known as the Forest Rights Act (FRA) was enacted in 2007 by the Ministry of Tribal Affairs, Government of India to correct the 'historic injustice done to forest-dwelling communities'. These communities were cultivating/ occupying forestland and using forest produce since ages but had no tenurial security. Broadly speaking, this Act recognizes and vests the individual tribal and forest-dweller with forest rights to live in and cultivate forestland that was occupied by them before 13th December 2005 and grants community forest rights to manage, protect, regenerate the forest and to own and dispose minor forest produce from forests where they had traditional access. Kerala has started implementing FRA immediately after the notification of the rules under FRA on 01.01.2008 through the Departments of Tribal Development,

Forests, Revenue as well as Survey and Land Records. This Act has endowed the traditional forest dwelling tribals with the right to live in the forest, the right to cultivate in forestlands for their livelihood, the right to collect minor forest produce, the right to graze cattle, the right to convert leases or grants to inalienable but inheritable titles, the right to convert forest villages into revenue villages, the right to settlement in the old habitations and unsurveyed villages, the right to access and community right over intellectual property.

- 8.9 The Forest Department has taken an active role in the implementation of the Forest Rights Act. The working plans prepared by the Forest Department for the management of divisions contained details of tribal settlements within each division. These are the oldest official references available on the tribal settlements in various forest areas. Subsequently, the department had prepared a compendium of details regarding tribal settlements with the assistance of Kerala Forest Research Institute, Peechi. This document served as basic data for the commencement of implementation of Forest Rights Act in the state. The boundaries of tribal settlements were demarcated on ground and they were marked on sketches with the geo-co-ordinates of survey points. The Forest Department officials as well as VSSs and EDCs took active role in sensitizing the tribals about their rights under the Forest Rights Act. This has been duly acknowledged in the report prepared by Shri. Jyothis Sathyapalan, Research Unit for Livelihoods and Natural Resources, Centre for Economic and Social Studies, Hyderabad. The forest officers in the field assist the officers of Survey and Land Records Department during their survey of individual holdings of tribals. Substantial progress has been achieved in the implementation of Forest Rights Act in the state. The National Forest Rights Committee has also expressed appreciation of the steps taken by the state government for conferring the rights on the tribals. It is informed that Tribal Research and Training Institute (TRTI), Maharashtra, has integrated the database of all forest right holders on GIS platform by giving a thirteen digit code to all claimants. This can be further studied and adopted so that the forest land held by each tribal family would be permanently demarcated.

Prevention of Exploitation and Alienation of Tribal Lands

- 8.10 Experiences in the past show that tribals are highly vulnerable to exploitation. Large extents of tribal lands have been illegally alienated to non-tribals. The Kerala Scheduled Tribes (Restriction on Transfer and Restoration of Alienated Lands) Act, 1975 enacted to prevent the alienation of tribal lands and to restore the alienated lands to tribals could not be implemented successfully. Extensive tribal lands in tribal areas are now occupied by non-tribals. Though Section 3 read with Sections 4 and 5 of The Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989 enacted by the Government of India also provides for prevention of alienation of tribal lands, such provisions are not seen invoked for protecting the tribal rights. The Kerala (Restriction on Transfer by and Restoration of Lands to Schedule Tribes) Act, 1999 enacted by the Government of Kerala contains provisions for regularizing illegal alienation and occupation of tribal lands up to two hectares by non-tribals.
- 8.11 The NWFP collected by tribals is being purchased at very low prices by middle-men who make huge profits. There are also instances in which such middle-men and local vendors act as money lenders and make the tribals indebted to them by giving advances of small sums for purchase of medicines, manure, liquor and provisions. Illiterate and unemployed tribals are the target groups of various extremist organizations.
- 8.12 The District Collector, Superintendent of Police and other officers of the Revenue, Police, Forest and Tribal Development Departments and panchayat authorities having jurisdiction over the area have a crucial role to play in preventing the illegal transactions of forest land, over which right has been conferred on a tribal under the Forest Rights Act. They should also keep surveillance over the strangers and non-tribals interacting with the members of the tribal community. Assistance of reputed NGOs working in the field of tribal development can also be enlisted for this purpose. Officers of the Departments of Tribal Development, Forest, Revenue and Police having jurisdiction over the area shall be authorized to make report to the authority to take cognizance of the offence under the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989, on the exploitation of tribals and alienation of tribal lands.

Forest Dwelling Tribals to be the Partners in Forest Management

8.13 The implementation of Forest Rights Act resulting in settlement of forest right will have to be invariably followed up with measures:

- (i) to build confidence and trust leading to partnership between Forest Department and tribals in forest conservation as well as tribal development and empowerment.
- (ii) to build up infrastructure support such as approach roads, water supply and electricity for the development of tribal settlements.
- (iii) to provide support for health, education, housing, sanitation and agriculture for enhancing the quality of life of tribals within forest areas.
- (iv) to develop required skills among tribals for collecting, processing and marketing of NWFP, tapping and utilization of their knowledge for better income generation and thereby ensure overall prosperity in their life systems.
- (v) to make them willing partners in conservation and management of forest wealth.

Various measures have to be planned and implemented to provide basic amenities such as food, housing, employment, health care, electricity, water and education to the forest dwelling tribal communities without any more delay. For achieving these goals, the service of Vana Samrakshana Samithis, eco development committees and forest development agencies shall be effectively utilized.

Providing Employment Opportunities in Forestry Sector

8.14 It is a widely known fact that the tribal families prefer to have a regular income for their subsistence rather than getting wages in lump sum. The experience of working in tribal areas has clearly indicated that they prefer to work wherever wages are paid on daily basis or at least on weekly basis. Therefore employment opportunities have to be created for tribals in such a way that tribals are paid their wages daily or at least on weekly basis. For this purpose tribals must be preferentially employed for all forestry and wildlife management activities and paid regularly and adequately.

Shift from Primary to Secondary and Tertiary Sectors

- 8.15 A shift of activities from primary sector to secondary and tertiary sectors is an indicator of economic transformation of any marginalized community. Policies and programmes to shift the tribals dependent exclusively on primary sector to secondary and tertiary sectors should be pursued to attain faster growth and development. A shift of forest dwelling tribals from a forest-based subsistence economy to other economic activities is an option for their socio-economic transformation even when they continue to stay in their forest hamlets. It calls for long term planning, strategies and actions.

Vocational Trainings

- 8.16 Vocational training should be provided on priority basis to the right holders and family members. Emphasis should be given to such trades, which may create employment opportunities in and around their habitation. However, if any right holders or their family members want to get training in such trades which can get them better employment outside their habitation, facilities for such training should also be made available. Some of such trades can be computer training, food and vegetable processing, traditional jewellery making, tailoring, electrical repairs, motor winding, mushroom cultivation, orchid cultivation, making of handicrafts and artifacts, cooking, carpet making, vehicle repairs, sericulture, handicrafts, fish rearing, fabrication, welding, driving, masonry, carpentry and compost making.

Support to Agriculture

- 8.17 The majority of the forest dwelling tribals belong to cultivating communities and a minority belong to food gathering communities. The cultivating tribals must be provided with all necessary aid and support to get better returns from agriculture. The food gathering nomadic tribal communities have to be gradually persuaded to settle and take up cultivation. Suitable agro-forestry models shall be developed for the tribal communities. Tribals may be incentivized to grow fruit bearing trees and medicinally valuable trees suitable to the locality by free supply of seedlings and grants for maintenance. Organic cultivation can be encouraged. They may be enabled to earn more income from agriculture by developing marketing facilities. Their agricultural crops must be given protection from crop raiding wild animals. Soil and

moisture conservation programmes must be given priority in tribal lands.

Storage, Value Addition and Marketing of NWFP

8.18 NWFP is being allotted by the Forest Department to tribals free of cost. It is often noticed that the full benefits of such facility are not available to the tribals for various reasons. Lack of facilities for storage, processing, value addition and marketing of NWFP has been a vexing problem for tribals. It is a well known fact that middlemen and local shopkeepers exploit the tribals by purchasing the NWFP collected by them at a very low price. The services of VSS, EDC and FDA can be utilised to collect, procure, process, store and market the NWFP, wherever tribal co-operative societies are not functioning. The materials so collected and processed by VSSs/EDCs members can be stored and marketed under the trademark and guidance of a central agency. Forest Department has started a society viz., 'Vanasree' for this purpose for promoting the processing, storage and marketing of NWFP collected by the tribals. The department is also facilitating VSSs/EDCs to open sales outlets in various localities under the guidance of Vanasree. It has been proposed to prescribe standards of processing, storage and packing in order to ensure better price in the market. This project should be implemented in all tribal colonies so that the NWFP collected by the tribals can be procured, processed, stored and marketed in a scientific manner. Facilities for collecting, storing, processing, value addition and marketing of NWFP shall be developed by the Forest Department utilizing the organizational structure for the JFM activities such as VSSs, EDCs, FDAs and Vanasree society. Forest officers with right aptitude and proper training shall be posted as the secretaries of tribal VSSs/EDCs for a period not less than five years.

Electrification of Tribal Colonies

8.19 The Kerala State Electricity Board is implementing a programme for total rural electrification under the umbrella project launched by the Government of India viz., Rajiv Gandhi Grameen Vidyuthikaran Yojana (RGGVY). The benefits under the scheme shall be extended to all tribal colonies for which suitable programmes shall be formulated and implemented by the KSEB, Tribal Development Department and Forest Department.

Health Care Facilities

8.20 Getting proper and timely treatment for diseases is a serious problem for the tribals. There are also complaints to the effect that the local private hospitals and medical shops charge unaffordable amounts from tribals for their treatment. Therefore a system should be worked out in such a way that all the government and private hospitals shall treat the ailment of any tribal and the expenditure shall be claimed from the local Panchayat on certification by the committee for management of settlement wise development plans as provided in Para 8.30. The Tribal Development Department should reimburse the amount to the Panchayat subsequently. Health insurance policy can also be provided to all tribal families.

Supply of Ration Materials at Tribal Colonies

8.21 It has been noticed that purchase of ration and other provisions from the market by tribals living in remote areas is a highly time consuming and expensive process. Tribals have to walk all the way from the forest colonies to the nearby places where markets and ration shops are available for the purchase of provisions and ration articles. Thereafter three or four tribals jointly hire a jeep to transport the purchased materials to their settlements. The hire charges of jeeps are unaffordable to them. Further the tribals cannot go for any wage earning work on that day. Therefore a system of mobile ration shops can be arranged jointly by Tribal Development Department, Civil Supplies Department, Forest Department and panchayat authorities. As per the standing orders of government, the tribal families would get rice at a rate of Rs. 2/- per kg. If supply of rice is at the rate of 5 kg per day per family, the cost of 35 kg of rice admissible to each family per week would be only Rs.70/-. Availing funds from Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) sources through Grama Panchayat, the forest development agency can arrange work in forest areas in such a way that at least one member from each family gets work for three or four days in a week. A workable arrangement can be formulated in consultation with the local officers of Forest, Tribal Development, Panchayat, Civil Supplies and Revenue Departments to ensure that the ration materials and minimum provisions are supplied to each family in the tribal colony in the forests. A small building to be used for storage of NWFP and ration articles can be constructed in every

colony using funds either from the Forest Department or from Tribal Development Department.

Programmes Implemented by Forest Department

8.22 **Organic Farming & Export:** The Forest Department has successfully implemented a pilot programme for export of organic pepper produced by the Mannan, Paliyan and Oorali tribes of Mannakkudy, Paliyakkudy and Vanchivayal settlements in Periyar tiger reserve. Necessary certifications were obtained and the following quantities of organic pepper could be exported:

Year	Quantity exported
2008	3825 kg
2009	4471 kg
2010	5300 kg

This has ensured better income to the tribal communities for their pepper. Organic farming of cardamom can be tried at Edamalakkudy where natural cardamom grows in the forest areas. Organic farming of various vegetables, herbal cosmetic etc. is an area, which can be developed for the better means of livelihood of tribals through proper technical training. Possibilities of organic farming, green certification, floriculture and export of products may be explored and made available to tribal communities.

8.23 **Voluntary Resettlement:** The Forest Department has formulated a project for voluntary rehabilitation and resettlement of tribals from areas, which are highly prone to wildlife attack. In Wayanad district there are 169 tribal settlements within the forest areas with high density of wild animal population which invariably results in crop damage and attack on human beings. The tribals have to walk long distances through the forest areas for any transactions outside the forests. The children should also walk long distances to go to schools in early morning hours and to return home in the evening hours. Therefore, as long as these tribal hamlets continue to exist in interior forests, the problems of man-wild animal conflict will continue. Therefore it would be better in the long term interest of the tribals to resettle and rehabilitate them in other forest areas either on the forest fringes or in isolated bits of forests. Resettlement

and rehabilitation of tribals can also be done in abandoned and poorly managed estate areas, which may be available for purchase by government. The resettlement can be done only as a voluntary relocation programme. This involves project formulation by an independent agency after a socio-economic survey of each hamlet. Forest Department has prepared such a scheme in association with Kerala Forest Research Institute, Peechi. The estimated cost of the project is Rs.80 Crores for the resettlement of 800 families from the core areas of Wayanad wildlife sanctuary. Such programmes shall be formulated and implemented in other areas also, depending on the availability of funds.

8.24 **Rehabilitation Scheme for Landless Tribals:** Forest Department has also prepared a rehabilitation scheme for landless tribals in Kerala by diverting 7693.23 ha. of vested forest lands. The salient features of this project are:

- (i) the project is a resettlement project with the involvement of the beneficiary community.
- (ii) resettlement has to achieve the twin objectives of rehabilitation through sustained agriculture and forest conservation through site specific micro plans for individual locality.
- (iii) land will be allotted to each family.
- (iv) infrastructure development will be an integral part of the project.
- (v) the project will take care of the education, health care and other basic needs of the rehabilitated people.
- (vi) the project will support the tribal families by providing suitable employment.
- (vii) adequate support to the families from the project till the families are fully rehabilitated.
- (viii) suitable institutional mechanism to be evolved for participative decision making.

8.25 Stage I and Stage II clearances have been obtained from the Government of India under Forest (Conservation) Act for the implementation of this project subject to the conditions specified in G.O.I/F.No.8-16/2002/FC dated 21.08.2003. Subsequently as per the submission of the department

through the Central Empowered Committee, the Hon'ble Supreme Court has agreed to implement the project without insisting on payment of net present value (NPV) for the forest areas proposed to be diverted for this project. The Hon'ble Supreme Court in its order dated 30.04.2010 in IA No.1137/2004 in Writ Petition (Civil) No.202/95 has permitted the implementation of the project leaving the question of payment of NPV open to be decided after the assignment is made. The implementation of this project has to be expedited.

Creation of a Separate Cadre of Reserve Watchers for Forest Dwelling Tribes

8.26 Tribals are being engaged as watchers in forest areas for work such as raising nursery, raising and maintenance of plantations, protection of forests and wildlife and fire protection. However, these are only seasonal employments, which do not give them an income on a regular basis round the year. There are large numbers of tribal youth who have passed examinations of and above the level of SSLC. There are 185 posts of Reserve Watchers in the Forest Department, which have to be filled through the Kerala Public Service Commission. It is often found that the non-tribals who get appointed to majority of such posts have no aptitude or willingness to work in remote forest areas. Very few forest dwelling tribals get appointed to such posts. The general tendency of tribals residing outside forest areas, who get appointment in Forest Department as Forest Guards or Reserve Watchers, is to try for postings in places near urban or semi urban areas. Therefore it will be in the interest of the department as well as in the interest of forest dwelling tribals to create at least 600 posts of Reserve Watchers to be filled in exclusively by forest dwelling tribals whose rights have been recognized under the Forest Rights Act. Therefore it is recommended that government may create 600 posts of Reserve Watchers to be recruited through PSC exclusively from forest dwelling tribals.

Preference to Forest Dwelling Tribes in the Recruitment of Forest Guards

8.27 In the case of recruitment to the posts of Forest Guards there is a statutory reservation for the tribal communities. In the case of selection process to the posts of Forest Guards, the forest dwelling tribes from the same district may be granted

an additional grace mark of 10% for which government may move the Kerala Public Service Commission.

Settlement-wise Development Plans

- 8.28 The development of tribals can be seen from three perspectives namely, individual needs, family needs and community needs. For overall development of the forest dwelling communities and to achieve better "quality of life index", the convergence of various developmental schemes implemented in such areas by agencies such as Tribal Development, Forests, Education, Employment and Training, Health, Housing, Water Resources, Civil Supplies and Co-operation Departments is essential. The Divisional Forest Officers have been empowered by the Government of India as per order No.F-23011/15/2008/SGII dated 18.05.2009, Ministry of Tribal Affairs, to grant clearance under Forest (Conservation) Act for the diversion of the forest areas up to 1.00 ha for infrastructure development such as schools, dispensary or hospital, anganwadis, fair price shops, electric and tele-communication lines, drinking water supply and water pipelines, minor irrigation canals, water harvesting structures, non conventional source of energy, roads and community centres. A committee of Divisional Forest Officers, Executive Engineers of Kerala State Electricity Board and Tribal Development Officers can be constituted to monitor and expedite the electrification works in the tribal colonies in forest areas. The forest lands granted under FRA should be developed so that such lands are utilized to the optimum level of production on sustainable basis.
- 8.29 Tribals must be provided with basic housing facilities suitable and acceptable to their culture, habit and livelihood. The design and style of houses should be only as per their choice so that they accept, own and stay in those houses, once constructed. The development plans for tribals have to be in tune with the area where their habitations are located. The development plans have to be prepared for each settlement after assessment of family and settlement wise needs. Overall district and state wise plans have to be prepared after a detailed family wise survey is conducted in each settlement.

Management Committees for Settlement-Wise Development Plans for Tribal Areas.

8.30 After the implementation of FRA, a strong and effective monitoring system should be put in place both at the district as well as state level to monitor the developmental activities in the tribal settlements in accordance with the settlement wise development plans. Members of civil society should also be inducted into the monitoring committees at all levels including the implementation level. It has often been noticed that the institutions such as tribal schools, tribal hostels, tribal health centre etc., functioning within the tribal settlements in forest areas face the very serious problem of shortage of staff. In many tribal schools and tribal hostels the management is very poor for want of sufficient employees. The officers posted in such institutions in remote forest areas seldom join duty. If at all they join, many of them proceed on leave till they get a transfer. Therefore it is suggested that a management committee may be constituted for each tribal settlement within the forest area for the implementation of settlement-wise development plan. The management committee may consist of the officers having jurisdiction over the area of all departments, Panchayat Member and Panchayat President. The District Education Officer or an officer nominated by him not below the rank of an Assistant Educational Officer, District Medical Officer or an officer nominated by him not below the rank of Deputy District Medical Officer, one or two representatives of non governmental organizations working in the field of tribal welfare and the officer designated as per Para 8.31 shall also be made members. The management committee should be delegated with sufficient powers to take decisions relating to day-to-day management of the institution. They should also be delegated with powers to engage any qualified persons among tribals preferably from the same locality as teacher or health inspector or nurse to meet the contingencies till the regular hands join. These committees shall also be delegated with powers to authorize treatment of any forest dwelling tribal in any hospital, the expense of which shall be borne by the Tribal Development Department.

Adoption of Tribal Colonies by Senior Officers

- 8.31 The forest dwelling tribal population is greater in Wayanad, Malappuram, Palakkad, Idukki, Kollam and Thiruvananthapuram districts compared to other districts. In the Forest Department there are about 200 officers of and above the rank of Range Officers who are posted in the field in or around forest areas. There are also officers from other departments such as tribal welfare, health and education who are posted in forest areas. Each of those officers can be directed to adopt one or two tribal hamlets and assigned the duties relating to coordination of welfare activities therein. Those officers who adopt such hamlets shall acquaint themselves with the members of the tribal community and their problems and requirements. They shall work as facilitators for tribal welfare activities and discuss their issues with the district level officers of concerned departments. The government shall also give appropriate instructions to the district level officers of various other development departments as well as the District Collector and Superintendent of Police to initiate urgent follow up action on the report submitted by such officers. The District Collector may also be directed to convene a meeting of such officers with the Superintendent of Police and the Divisional Forest Officers so that the problems and concerns relating to tribal development can be immediately addressed.
- 8.32 The whole idea of the programmes should be to empower the tribals to become willing partners in the management of forest with genuine interest in conservation and sustainable use.

CHAPTER IX

MASSIVE PEOPLES' MOVEMENT FOR TREE FARMING

- 9.1 There is enormous scope to commence a massive peoples' movement for tree farming in private lands in Kerala. This will meet both the economic needs of individuals and the ecological needs of the community. All over the world, there is awareness of and concern over the accelerated rate of deforestation and consequent global warming and climate change. The United Nations Environment Programme (UNEP) has launched the '*Plant for the Planet: Billion Tree Programme*' with a view to increasing the green cover of planet earth. The Kerala Forest Department has been doing commendable work in this field by implementing the following programmes with the slogan – '*Global Warming – Tree is the Answer*'.

Ente Maram (My Tree) for School Children.

- 9.2 All the school children from Class V to IX in more than 6000 schools all over the state are supplied with a seedling of an indigenous tree species on 5th June (World Environment Day) by the Forest Department every year. The planting programme is organized jointly by the Forest Department and the Education Department under the guidance of the teachers in the respective schools. The children have planted about 66.86 lakh seedlings in their homesteads during 2007, 2008, 2009 and 2010. This programme which has achieved about 80% success has secured Indira Priyadarshini Vrikshamitra Award - 2007.

Nammude Maram (Our Tree) for College Students

- 9.3 Kerala Forest Department supplies seedlings to college students for greening their campus by planting trees. The programme is implemented with the co-operation of the Education Department and National Service Scheme. A total of 15.46 lakh seedlings have been distributed during 2008, 2009 and 2010.

Haritha Theeram

- 9.4 This is the programme for greening the coastal belt. An extent of about 164 ha. of coastal land has been afforested under this scheme during the last five years.

Vazhiyora Thanal

- 9.5 This is a programme for planting trees along the sides of the road with the co-operation of members of trade unions in each locality. So far about 1.2 lakh seedlings have been planted under this scheme.

Haritha Keralam

- 9.6 This is the umbrella project commenced during 2009 under which all the above mentioned schemes are now being implemented. Apart from planting trees under the above schemes, trees are planted in all public lands and vacant lands with the help of Panchayat Authorities and Kudumbasree units. Dr.A.P.J.Abdul Kalam former President of India had launched this programme officially on 05.06.2009. Organizations from all walks of life such as Panchayati Raj institutions, educational institutions, mass media, public sector undertakings, private sector undertakings, trade unions, non-governmental organizations, non-governmental individuals, residential associations, religious institutions, youth organizations, service organizations and political parties had participated in this programme.
- 9.7 In view of the discontinuance of timber extraction from natural forests as per the policy decision of the government, the needs of the people for timber cannot be fully met by the timber from the plantations of the Forest Department. Industrial raw materials required for Hindustan Newsprint Limited is being supplied from the plantations of industrial raw materials raised by the Forest Department in accordance with the long term contract with government. The wood balance study done by Kerala Forest Research Institute, Peechi clearly indicates that hardly 10% of the requirement of the timber in the state is met from government sources. Approximately 40% of requirement of timber in the state is met by timber from rubber plantations and 41% is from homesteads. The remaining quantity is met by imports.
- 9.8 The timber available from homesteads would be exhausted soon, unless enough new saplings are planted in lieu of the ones cut and removed. In the case of rubber, the yield of timber is likely to continue since such areas are regularly replanted.

9.9 Agriculture in the state is becoming gradually uneconomic due to the prohibitively high cost of labour. At present the labour cost in agriculture is more than Rs.300/- per day. Due to availability of labour and higher wages in IT, civil construction and service sectors, agricultural labour has become less attractive and the availability of labour for agriculture sector has been reduced considerably. Therefore there is enough scope for tree farming in private lands, which is a less labour intensive alternative to ensure economic security of the farmer and timber security along with ecological security of the society.

9.10 There are several constraints that hinder tree farming from becoming a massive peoples' movement in Kerala. Being a long-term activity, the small and marginal farmers who constitute the majority of the farming community in the state, find it difficult to adopt tree farming in the present circumstances. Non-availability of finances at low interest rates, lack of facilities for product processing and marketing and lack of institutional linkages are other problems that impede tree farming on a massive scale. Therefore various proactive steps will have to be taken by the department and government to encourage the farmers to utilize their uncultivated lands for tree farming. The following steps are recommended to incentivise the people:

- (i) areas taken up for tree farming should be exempted from the land ceiling limits as per the Kerala Land Reforms Act.
- (ii) Forest Department with the help of research institutions should develop better quality clones of indigenous species and provide necessary scientific information on tree farming to the farmers.
- (iii) viable agro forestry models shall be developed.
- (iv) loans at low interest rates have to be made available to the farmers.
- (v) subsidy may be granted to the long-term investments in tree farming as in the case of rubber cultivation.
- (vi) the income derived from tree farming shall be exempted from income tax.

- (vii) permanent institutional arrangement to give effective guidance and information to the farmers shall be established using the services of the existing extension units of Forest Department and the proposed social forestry units at block panchayat level.
- (viii) formation of tree farmer's co-operative societies should be facilitated to organize the farmers to take care of their interest and to avoid exploitation by middlemen.
- (ix) all necessary and sufficient information for raising nursery, planting, cultural operations, marketing etc. shall be made available on the website of the department.
- (x) the department should supply quality seeds and seedlings on a no profit no loss basis.
- (xi) the tree growers should be allowed to sell their products anywhere at their choice within or outside the state.
- (xii) NABARD may be approached for providing long term loans on priority basis for taking up tree farming.
- (xiii) the scope for obtaining carbon credit for tree farming by farmers can be worked out.
- (xiv) multi sectoral linkages with stakeholders, farmers, wood based industries, financial institutions, government agencies, NGOs and media should be established.
- (xv) massive awareness programmes through Panchayats, NGOs, education institutions and media should be organized.

Activities Relating to National Mission for a Green India (GIM)

9.11 The National Mission for a Green India is one of the eight Missions under the National Action Plan on Climate Change (NAPCC). It has been widely recognized that the climate change phenomenon will seriously affect and alter the distribution, type and quality of natural biological resources of the country and the associated livelihoods of the people. GIM envisages environmental amelioration through activities in the

forestry sector to ensure mitigation of the adverse impact of climate change, food security, water security, biodiversity conservation and livelihood security of the forest dependent communities. The mission will enhance ecosystem services such as carbon sequestration and hydrological services. It will also improve biodiversity values of ecosystems and provide economic goods such as fuel, fodder, small timber and non wood forest produce. The objectives of the GIM are:

- (i) increased forest /tree cover on five million ha of forest/ non forest lands and improved quality of forest cover on another five million ha (a total of 10 million ha).
- (ii) improved ecosystem services including biodiversity, hydrological services and carbon sequestration as a result of treatment of 10 million ha.
- (iii) increased forest-based livelihood income of about three million households living in and around the forests.
- (iv) enhanced annual carbon sequestration by 50 to 60 million tons in the year 2020.

The national mission target of 10 million ha, to enable achievement of the overall objectives comprises of the following:

Sl.No	Activity	Target (m ha)
(i)	Qualitative improvements of forest cover in moderately dense forests.	1.5
(ii)	Qualitative improvements of forest cover in open degraded forests.	3.0
(iii)	Qualitative improvement of degraded grassland ecosystems.	0.4
(iv)	Improvement of wetland ecosystems	0.1
(v)	Eco-restoration /afforestation of scrub, shifting cultivation areas, cold deserts, mangroves, ravines and abandoned mining areas.	2.0

(vi)	Agro-forestry and social forestry	3.0
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The total estimated cost for this programme is Rs.46,000 Crores. As per the strategy of GIM, the local communities will have to play a key role in project formulation, implementation and governance. For this purpose, Gram Sabhas, Joint Forest Management Committees (JFMCs), Community Forest Management (CFM) groups, committee setup under the Forest Rights Act, Biodiversity Management Committees and Panchayati Raj institutions will be empowered and strengthened. It has been envisaged that GIM will invest in the development of a community based change agents viz. community foresters from amongst the educated youth. These community foresters will facilitate the planning, implementation and monitoring of the mission activities at the local level. This will provide skilled employment opportunities to one lakh educated community youth. The Forest Department will have to play a vital role to provide technical support and guidance to the above mentioned committees in order to strengthen decentralized and sustainable management of forests. Therefore, the Forest Department has to prepare itself to take up the challenges of the GIM. Necessary technical staff will have to be recruited, trained and posted in all Panchayati Raj institutions, who will train and guide the community foresters and also give necessary technical and administrative support to Gram Sabhas, JFMCs and such other community based organizations.

CHAPTER X

POLICY AND LEGAL ISSUES

- 10.1 Kerala Forest Department is the implementing authority of various enactments and rules relating to forest and wildlife, which are listed hereunder:
- (i) The Kerala Forest Act, 1961 and rules made there under
 - (ii) The Kerala Private Forests (Vesting and Assignment) Act, 1971 and rules made there under
 - (iii) The Wildlife (Protection) Act, 1972 and rules made there under
 - (iv) The Kerala (Restriction on Cutting and Destruction of Valuable Trees) Act, 1974
 - (v) The Kerala Forest Produce (Fixation of Selling Price) Act, 1978
 - (vi) The Forest (Conservation) Act, 1980
 - (vii) The Kerala Grants and Leases (Modification of Rights) Act, 1980
 - (viii) The Kerala Preservation of Trees Act, 1986
 - (ix) The Kerala Forests (Vesting and Management of Ecologically Fragile Lands) Act, 2003
 - (x) The Kerala Promotion of Tree Growth in Non-forest Areas Act, 2005.
- 10.2 The department is also actively involved in the implementation of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. The Deputy Rangers are the officers empowered to charge cases under the provisions of Narcotic Drugs and Psychotropic Substances Act, 1985.
- 10.3 There are a few policy and legal issues which should be solved for the effective implementation of the above enactments and rules. The important ones among them are explained here under:

Ownership of Trees Grown by the Occupants of Forest Areas under Pattayams Issued by Revenue Authorities

10.4 Soon after World War II the government in their wisdom had earmarked highly fertile forest areas in various valleys and allotted the lands to farmers and to defence service personnel under various colonization schemes to increase food production. This was done to solve the problem of acute shortage of food after World War II. Similarly pattayams were also issued for forest lands under arable land scheme in accordance with the provisions of the Arable Forest Land Assignment Rules, 1970. Such areas for which pattayams were issued are classified as non revertible forest lands. Pattayams have also been issued to persons who encroached into forestlands prior to 01.01.1977 and occupied and developed such lands. Such pattayams have been issued under the provisions of The Kerala Land Assignment (Regularization of Occupations of Forest Lands Prior to 01.01.1977) Special Rules, 1993. Yet another category is the land in the colonies within forests which are occupied by the members of scheduled tribe for which record of forest rights are being granted under the provisions of Forest Rights Act, 2006.

10.5 Pattayams are issued in the form prescribed under the said rules. Condition No.I of the pattayams is quoted hereunder:

'The full right over all the trees within the grant and specified in the schedule vests in the government and the assignee is bound to take care of all such trees standing on the land at the time of assignment or that may come into existence subsequent to it.'

10.6 From the above condition it can be seen that the ownership of all trees which are growing and which would grow in the land covered in the pattayams will remain with the government. At the time of issuance of pattayams, the beneficiary shall remit to the government, the value of the land and the tree, which can be sold to the occupants as per rules. When the land was originally allotted, most of the allottees of the land did not make payment of the tree value and therefore the ownership of the trees in the assigned lands continue to remain with the government. As per rule 3 of The Kerala

Forest (Preservation, Reproduction and Disposal of Trees and Timber Belonging to Government but Grown on Lands in the Occupation of Private Persons) Rules, 1975 teak, rosewood, ebony and sandalwood cannot be sold to the occupants. In view of the socio-political situation existing at the time of allotment, the trees growing in the land covered by the pattayams were not cut and removed or sold by the department. As per rule 13 of The Kerala Land Assignment (Regularization of Occupations of Forest Lands Prior to 01.01.1977) Special Rules, 1993, the assignee of the land shall afford all facilities to the officers of the government in the matter of inspecting the land periodically for checking the trees and removing them if necessary. Such condition has been incorporated in the Arable Forest Land Assignment Rules, 1970 as well. After taking over the land, the patta holders started cultivating the land retaining the trees. They had also started growing other useful trees such as Plavu (*Artocarpus integrifolia*), Mavu (*Mangifera indica*), Anjili (*Artocarpus hirsuta*), Cashew (*Anacardium occidentale*), Kudampuli (*Garcinia*) etc. In view of the conditions as stipulated in the rules cited above, the owners of the land are not in a position to cut and remove the trees, even if they were actually grown by them. Yet another difficulty is the lack of dis-reservation of such forest areas. In olden days the dis-reservation of forest land was not a pre-requisite for the allotment of land under various rules for assignment of lands. Therefore in the strict sense of the law these areas retain the legal status of Reserved Forests though their physical status has changed. Thus there are several impediments, which prevent the owner of the patta land from felling and selling the trees planted and grown by them.

- 10.7 In fact many of these lands are non-revertible forest lands, which were transferred to the Revenue Department for distribution of pattayams well before the enactment of The Forest (Conservation) Act, 1980. Such restrictions on felling and use of timber by the occupants lead to unnecessary conflict between occupants and forest officers leaving enough scope for allegations, counter allegations and undesirable practices. Though The Kerala Promotion of Tree Growth In Non Forest Areas Act has been enacted in 2005, the liberalization introduced in the said Act has little impact in such areas. Many trees get damaged during agricultural operations carried out by the occupants such as ploughing,

soil working, burning debris etc. In view of the fact that these are non-revertible forestland, government have to take a policy decision relating to the disposal of such trees and amend the relevant rules, if necessary, for the implementation of such decisions.

Revision of Forest Code

- 10.8 The present Forest Code was prepared and published in 1972. A large number of changes in policy, legal and procedural matters have taken place thereafter in the department. A Committee consisting of Shri.T.K.Raghavan Nair IFS, Principal Chief Conservator of Forests (Retd) and Shri.M.Govindankutty IFS, Principal Chief Conservator of Forests (Retd) was constituted by the government for revising the Forest Code. This Committee had submitted its report in October 2000 to the government for approval. The process of approval of revised Forest Code may be expedited.

Conservation of CHR Areas

- 10.9 Cardamom Hill Reserve (CHR) extending over 215720 acres was notified as per the proclamation of the Maharaja of Travancore in 1897. Leasing of CHR areas for cardamom cultivation started in 1905. Thereafter large extents of CHR areas were leased out as per the provisions of Cardamom Rules, 1935. As per the existing government orders, the control over lands in the lease areas in CHR is with the Revenue Department, whereas the responsibility of the protection of trees in such lease lands is with the Forest Department. Experiences in the past indicate that this dual control system is not conducive to the protection of tree growth in the area. Whenever trees in leased CHR areas are illicitly felled, cases are booked by the forest officers. However, the leases are not cancelled by the revenue authorities for the violation of lease conditions. It remains a fact that the tree growth in cardamom lease areas is getting depleted year after year, which is adversely affecting the microclimate and long-term productivity of the plantations. Therefore it is recommended that government may take a policy decision to stop the present dual control system.

Reservation of Unreserved Forests and POB Lands

- 10.10 There is a considerable extent of unreserved forests at Pallivasal and Chinnakanal within the jurisdiction of Munnar forest division. These forests serve as excellent habitats for

wild animals in general and as corridor for wild elephants in particular. There are a few forest areas in Wayanad district, which are classified as Prohibitory Order Book (POB) lands. Urgent action may be taken to notify the unreserved forest lands and POB lands as Reserved Forests.

Conduct of Cases in Magistrate Court, Sub Courts, District Courts and High Court

10.11 The present system of conducting cases related to forest land, revenue and forest offences in Magistrate Court, Sub Court, District Courts and High Court requires change for increasing success rates. The Government Pleaders/Assistant Public Prosecutors appointed by the government in that particular court conduct the cases as per the present system, even if such cases involve large extents of land or huge amounts of revenue or high stakes. The Government Pleaders & Assistant Public Prosecutors conduct cases for all the departments and hence find it difficult to devote sufficient time to individual forest cases. If one Government Pleader/Assistant Public Prosecutor is absent or is engaged in other cases on a given day, then the case files are entrusted to another Government Pleader/Assistant Public Prosecutor, who is available on that particular day. The new Government Pleader / Assistant Public Prosecutor may not have previous acquaintance with that case file or with the facts and laws relating to the case. The officers who go to brief the counsel will have to teach each advocate the facts and circumstances of the cases afresh. Such lawyers who appear to defend government cases as a temporary arrangement may not always be effective. Such a system has considerably reduced the efficiency in conducting the cases successfully. Therefore a more efficient system should be brought in to defend government cases more effectively. It is recommended to empanel in each district, a small group of lawyers who have expertise, experience and commitment to the cause of conservation of biodiversity and environment (Green Panel of Advocates). The assistance of well-reputed non-governmental organizations in the field such as Lawyers Environmental Awareness Forum (LEAF) and Bar Council can be sought to select such lawyers. Government can fix the terms and conditions for their appearance and fee. Government Pleaders/Assistant Public Prosecutors posted in various courts can take notice on behalf of the government and department and intimate the respondent officers. The officers of and

above the rank of Divisional Forest Officer may be given freedom to entrust the case, depending on the nature and gravity of the problems, to any empanelled advocate. This will ensure better legal assistance of continuity in conducting the cases. Divisional Forest Officers should be empowered to engage an advocate from the panel.

Conducting Criminal Cases Registered by Police Against Forest Officers for their Bonafide Actions During the Performance of Duties.

10.12 Many forest officers face prosecution based on cases registered by police or on the complaints lodged by private persons alleging harassment during the performance of their duties. In most of these cases, the officers are finally acquitted. But the long drawn criminal proceedings and the expenses for conducting the cases result in demoralization of the officers, mental agony, tarnishing of the image of the officers and the department and huge expenditure. Hence it is recommended that the police shall not register cases against forest officers for any action carried out in good faith during the performance of their duties unless it is found in the enquiry to be conducted by the Revenue Divisional Officer that there is prima-facie case against them. In the event of opening fire using official fire arms during the performance of duty, resulting in death of or injury to any forest offender, the forest officers shall not be arrested and prosecuted without a magisterial enquiry by the Revenue Divisional Officer having jurisdiction over the area.

Prevention of Performance of Duty of Forest Officers to be Made an Offence under The Kerala Forest Act

10.13 Prevention of performance of duty of any government servant is an offence under Section 186 of IPC. At present such cases can be investigated and prosecuted only by a police officer. In remote forest areas, the protective staff have to face severe resistance including attack from organized gangs. It would be difficult to get witnesses for prosecuting such offenders successfully. In the case of enactments relating to customs, excise etc., prevention of performance of duty of customs and excise officers is an offence under the respective enactments and therefore the offenders can be booked by the customs and excise officers themselves. Similar provisions have to be incorporated in Kerala Forest Act.

CHAPTER XI

OTHER IMPORTANT RECOMMENDATIONS

Committee of Chief Conservators of Forests

- 11.1 Principal Chief Conservators of Forests, Additional Principal Chief Conservators of Forests and Chief Conservators of Forests are in charge of various wings of the department such as administration, development, protection, vigilance, working plan and research, eco-development and tribal welfare, wildlife, social forestry, special afforestation, infrastructure and human resource development (IHRD). The social forestry wing and wildlife wing are headed by Principal Chief Conservator of Forests. As per G.O.(MS) NO.52/83/GAD dated 24.02.1983 (**Annexure-20**) government constituted a Committee of Chief Conservators of Forests for the purpose of greater co-ordination among the different wings. The Committee has to meet every week with regular agenda which may include items of importance that officers of other wings should know and there should be discussions on matters affecting all the wings like transfer of senior officers and other proposals. The junior most Chief Conservator of Forests was designated to maintain minutes of the weekly meetings. Now Chief Conservators of Forests, Additional Principal Chief Conservators of Forests and Principal Chief Conservators of Forests are meeting every week and are discussing all issues as stipulated in the government order. But the government has not specified the duties and functions as well as powers of the Committee of Chief Conservators of Forests. If the committee has to function effectively, it should be delegated with necessary and sufficient powers.
- 11.2 The duties and functions of the above committees shall be formally entrusted with the Committee of Chief Conservators of Forests. The following powers shall also be delegated to the Committee of Chief Conservators of Forests:
- (i) moderation of performance appraisal reports (PAR) on Assistant Conservators of Forests and Range Officers.
 - (ii) sanctioning of research projects funded by the department.

- (iii) printing of education and publicity materials in private presses in emergencies
- (iv) approval of annual plan of operation (APO) for National Afforestation Programme (NAP).
- (v) approval of APO for Teak Revolving Fund, Pulp Wood Revolving Fund and Forest Development Fund.
- (vi) approval of APO for Finance Commission Award
- (vii) approval of working plans of territorial divisions for submission to Government of India
- (viii) approval of management plans of sanctuaries and National Parks.

Additional Principal Chief Conservators of Forests, Principal Chief Conservators of Forests and Council of Chief Conservators of Forests may be delegated with the following financial powers.

SI No.	Item	Delegation of powers (Rs. in lakhs)		
		APCCF	PCCF	Council of CCFs
1	Granting Administrative Sanction for civil works	20.00	30.00	50.00
2	Education and extension	5.00	10.00	20.00
3	Seminar, workshop and exhibition	5.00	10.00	20.00
4	Printing in private press	1.00	2.00	3.00
5	Major repairs of vehicles	0.50	1.00	2.00
6	Research projects & studies	-	-	50.00
7	Settlement of Miscellaneous Advances and Forest Advances	-	-	Full powers

Delegation of Powers to the Officers of and above the Rank of Conservator of Forests to Sell Sandalwood and Teak Trees for Religious Purposes to Individuals or Religious Institutions.

11.3 In a large number of temples in Kerala, sandalwood is being used in poojas and other rituals. Similarly teak trees are in demand for construction of masts in front of temples and churches. On certain occasions, sandalwood may be used for cremation. The government owns the majority of teak trees and sandal wood trees in the state. Sandalwood owned by

private individuals cannot be disposed of by them as per The Kerala Forest Act as amended by Act 8 of 2010. In order to meet such religious needs, the temples or churches make request for direct purchase of sandalwood or teak. In the case of teak for temple masts, the tree has to be identified and felled after doing poojas. In the absence of delegation of powers, each time such religious institutions or individuals have to approach government for orders in individual cases. The delay caused in getting reports from the field and issuance of orders is being criticized by the public. Therefore it is recommended that sandalwood and teak trees may be permitted to be sold to religious institutions and individuals subject to the conditions and procedure prescribed below:

- (i) the quantity of sandalwood that can be sold at a time to a religious institution shall be limited to 10kg.
- (ii) the sandalwood that can be sold to an individual for the purpose of cremation shall be limited to 10kg.

11.4 In both the cases the rate at which it shall be sold has to be 25% above the average rate obtained for that quality in the previous auction. If there had been no auction of sandalwood for a period more than one year, the average rate of sandalwood shall be increased by 10% for each completed year after the last auction. In the case of teak the rate realized shall be 25% above the schedule rate for that quality class.

Realising Loss from Officers in Charge of the Station/ Section for the Loss of Forest Produce from Their Jurisdiction.

11.5 According to the present practice in the department, it is presumed that all the forest produce within the jurisdiction of an officer or a group of officers in charge of beat/section/station are in the personal custody of the officers. Therefore whenever forest produce is lost from their jurisdiction, the officers in charge of the forest area are made personally liable for the loss. But the fact remains that the forests are physically open though they are legally closed. Therefore in case of detection of illicit removal of forest produce the tendency of forest officers in charge of the area is to show minimum amount as loss for the fear that the loss will be realized from them. It would be better to dispense with this

practice as a regular process. If the officer in charge of the circle is convinced that the pilferage or theft of the forest produce has taken place in spite of due diligence on the part of the forest officers, the Conservator of Forests or Chief Conservator of Forests in charge shall be authorized to absolve the officers in charge of beat / section / station from the liabilities in this regard. If the theft has taken place with the connivance of the staff or due to their dereliction of duty, the loss can be realized from them.

Cheque Drawing Powers for Senior Superintendent / Administrative Assistant / Senior Administrative Assistant.

11.6 The Divisional Forest Officers / Conservators of Forests / Chief Conservators of Forests are drawing and disbursing officers and treasury officers in divisions, circles and at the offices of Chief Conservators of Forests. In most of the division, circle and state level offices, there are Senior Superintendents, Administrative Assistants or Senior Administrative Assistants as head of the ministerial staff. Since the duties of DFOs/CFs and CCFs have increased manifold both within and outside forest areas, delegation of cheque drawing powers to the ministerial heads of each office will increase the efficiency of the office. Hence heads of ministerial staff in division, circle and state level offices may be delegated with powers for the sanction of establishment expenditure and for the drawl of cheque as well as disbursal of all payments towards establishment expenditure of all staff. They may also be delegated with powers to draw cheques for the expenditure in respect of bills passed by Divisional Forest Officer / Conservator of Forests / Chief Conservator of Forests as the case may be to meet expenditure for works, purchases etc.

Convener System and Contract System

11.7 A few decades back, the works in forest areas relating to raising and maintenance of plantations, maintenance of natural forests, thinning and timber operations and such other works were got executed by Range Officers using petty contract system. The Range Officers, Deputy Rangers and Foresters in charge of the work were held primarily responsible for any failures in the work executed under petty contract system and proportionate amounts of expenditure used to be realized from them. This system had resulted in accumulation of huge amounts as forest advances and

miscellaneous advances outstanding against the officers in the field. During 1990 a system called convener system was introduced as per G.O (MS)No.118/89/Forest dated 21.12.1989. According to this system a few of the workers are approved by the Range Officer as conveners for executing forestry works. A convener entrusted with the work shall receive the wages for and on behalf of all the workers in the group. Work bill for completed works will have to be prepared by the Forester, every week, after measurement of the works. The bill is recommended by the Range Officer after verification of bill and work. They are then passed and paid by the Divisional Forest Officer after check measurement as stipulated in the relevant Government Orders.

- 11.8 In this system, nobody is specifically responsible to ensure success of forestry works. In practice, it is noticed that there is no true convener system in the field. At present conveners have transformed themselves as small contractors who do not have any legal responsibility for the success of the works. If the convener is only one among the workers to receive the wages on behalf of his co-workers as well, he cannot even get his wages on the days he goes for receiving and encashing the cheques. If the wages cannot be released in time due to delays in passing the bills after check measurement or in getting budget allotment and letter of credit, no convener can be expected to invest money in the work. The net result is that the conveners in the field have in fact become contractors while retaining the name of conveners, but without any legal or contractual liability. There has been criticism about the working of the convener system, because it fails whenever there is shortage or a delay in flow of funds which happens often in the governmental system. Hence it is suggested to introduce contract system in planting and thinning operation as well. Pilot schemes can be introduced with a contract period of five years for raising plantations. For extraction of teak poles and timber during thinning operations, contract system can be introduced as in the case of final felling operations. But the staff of the department shall necessarily do marking of trees in the plantations for thinning as well as final felling operations.

Crop Damage by Wild Animals to be Treated as Natural Calamity

11.9 At present farmers get compensation for crop damage caused by floods, landslides, droughts etc. because they are categorized as natural calamities. But the crop damage caused by wild animals does not qualify for financial assistance under the schemes for granting relief to victims of natural calamities. Hence it is recommended that crop damage by wild animals should also be treated as a natural calamity, which would entitle the farmer to receive financial assistance from the National Natural Calamity Relief Fund.

Release of Funds Under Centrally Sponsored Schemes.

11.10 Centrally sponsored schemes fall under three categories namely, hundred percent centrally sponsored scheme, 75% centrally sponsored scheme and 50% centrally sponsored scheme. In the case of 75% centrally sponsored schemes and 50% centrally sponsored schemes, the state government restricts the release of state funds proportionate to the central release. The funds for protection and management of all sanctuaries and National Parks are from 50% centrally sponsored schemes. The works for protection and management of wildlife have to be executed during specified seasons. Generally funds from Government of India under the centrally sponsored schemes are released only after the first half of the financial year and in various instalments. If the state government does not release the state share equal to 50% of the total budget provision during the first and second quarter of the financial year, it will not be possible to take up and complete the works relating to development and conservation in sanctuaries and National Parks. Therefore, it is recommended that state government may release the state share of the centrally sponsored schemes during the first and second quarter of the financial year itself for executing works in time during the appropriate season.

Eviction of Post 01.01.1977 Encroachments

11.11 While granting clearance under Forest (Conservation) Act, 1980 for the diversion of 28588 ha. of forest land under encroachment prior to 01.01.1977 for issuance of pattayam, it was stipulated that post 01.01.1977 encroachments will be evicted. The Hon'ble High Court has also directed to evict post

01.01.1977 encroachments and to report compliance. Therefore, most expeditious action has to be taken to evict post 01.01.1977 encroachments and to implement schemes for eco restoration under National Afforestation Programme (NAP) adopting the strategy of joint forest management (JFM). For this purpose post 01.01.1977 encroachments may be immediately demarcated.

Strengthening of Vigilance Wing

11.12 The Vigilance wing of the department is headed by the Additional Principal Chief Conservator of Forests (Vigilance). There are two Conservators of Forests (Inspection & Evaluation) and there are eight flying squad divisions. The jurisdiction of some of the flying squad divisions extends to more than one district and at times even to three districts. In order to make the vigilance set up of the department more effective it is recommended to form four more flying squad divisions, one each in the districts of Wayanad, Malappuram, Thrissur and Pathanamthitta. A proposal submitted to Government in this regard may be sanctioned without delay. The designations of Conservator of Forests (Inspection & Evaluation) and Divisional Forest Officer (Flying Squad) may be changed as Conservator of Forests (Vigilance) and Divisional Forest Officer (Vigilance) respectively.

Delegation of Powers to Range Officers

11.13 Forest Range Officers have not been delegated with sufficient powers for their day to day functions. Therefore it is recommended that the Range Officers may be delegated with the following powers for their effective functioning:

- (i) to sanction estimates for amounts up to Rs.5,000/- for ganja raids
- (ii) to sanction estimates for amounts up to Rs.5,000/- for working down thondy
- (iii) to incur expenses for minor repairs and maintenance of vehicles up to Rs.1000/- at a time subject to an annual ceiling of Rs.6,000/-
- (iv) to incur expenses for repairs and maintenance of computers and peripherals, purchase of stationery and office expenses up to Rs.1,000/- at a time

subject to the annual ceiling of Rs.6,000/-

- (v) to incur expenses towards the cost of fuel, lubricants, servicing, tyre, battery etc. subject to estimate sanctioned for the annual maintenance of the vehicle.

CHAPTER XII

FINANCIAL RESOURCES

- 12.1 In the past forests used to be regarded by administrators only as untapped sources of revenue for the state. Practically little amount was being spent for its improvement or enrichment. Unbridled exploitation of forests has depleted them, both in terms of extent and quality. Deforestation and consequent soil erosion, floods and droughts have started affecting the congenial living conditions and economic growth in the society. Many species of flora & fauna are becoming extinct, rare, endangered or threatened. In view of the unprecedented problems and crises arising out of global warming, climate change and depletion of biodiversity, conscious efforts have to be taken to increase the tree cover in non-forest areas, improve the quality of forests, harness more quantity of better quality water and thereby ameliorate the living environment. Though the above mentioned needs are being increasingly appreciated, it is not seen reflected in the financial allocation to the forestry sector as can be seen from **Annexure –21 & 22**. From the tables it can be seen that:
- (i) the total allocation under plan schemes to forestry sector is only 0.98% of the total plan outlay of the State
 - (ii) the total allocation under non-plan schemes to forestry sector is only 0.46% of the total non-plan outlay of the State.
 - (iii) out of the total non-plan allotment to forestry sector, about 60.97% is only for meeting the establishment expenditure leaving only 39.03% for developmental activities.
- 12.2 It is also noticed that the financial resources available for developmental activities, conservation of soil and water, conservation of forests & bio-diversity and increasing tree cover had been grossly inadequate. Though there has been a marginal increase in the budget outlay, in the recent past, such increase was hardly sufficient to meet the increase in cost of labour, materials, and thus there is no increase in real terms. Even the revenue derived from forests is not fully spent for their conservation, though as per policy, revenue from forests is only the last concern of the State. To protect,

conserve and sustainably use the invaluable forest resources of the state for the common good, the state must commit sufficient budgetary allocation. It is therefore recommended that the plan outlay of the forestry sector in Kerala may be enhanced to at least 2.5% of the total plan outlay of the state.

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