

**GOVERNMENT OF INDIA
ENVIRONMENT AND FORESTS
LOK SABHA**

STARRED QUESTION NO:525

ANSWERED ON:22.05.2006

RECOMMENDATIONS OF NATIONAL FOREST COMMISSION

Shakya Shri Raghuraj Singh; Vallabhaneni Shri Balashowry

Will the Minister of ENVIRONMENT AND FORESTS be pleased to state:

- (a) whether the Government proposes to amend Forest (Conservation) Act, 1980 as per the present requirements;
- (b) if so, the details thereof;
- (c) whether the National Forest Commission (NFC) has submitted its report to the Government;
- (d) if so, the details of the recommendations made; and
- (e) the follow-up action taken so far/ likely to be taken by the Government in this regard?

Answer

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT AND FORESTS (SHRI NAMO NARAIN MEENA)

- (a) No, Sir.
- (b) Does not arise.
- (c) Yes, Sir. The National Forest Commission has submitted its report on 28.3.2006.
- (d) There are 360 recommendations made by the National Forest Commission, the details of which are annexed.
- (e) A committee has been set up in the Ministry of Environment & Forests, Government of India to examine areas on which action is needed.

ANNEXURE

STATEMENT REFERRED TO IN PART (d) OF REPLY TO LOK SABHA STARRED QUESTION NO.525 FOR ANSWER ON 22.5.2006 REGARDING RECOMMENDATIONS OF NATIONAL FOREST COMMISSION BY SHRI RAGHURAJ SINGH SHAKYA AND SHRI BALASHOWRY VALLABHANENI

Recommendations of the National Forest Commission

[1] Forests should be classified on the basis of their status, such as pristine, limax, managed and degraded forests. There is a need to undertake scientific research to assess the optimum forest/tree cover in a given area according to the forest type and topography to meet the intended objectives. The quality of the forest should also be classified as `open forest`, `dense forests` and `very dense forests` and the rest may be in the form of grassland, glacier, desert, etc. Extent of forest cover in recorded forest boundaries needs to be separated from tree cover due to plantations of species such as coffee, tea, apple, mango, palm, orange, etc, as well as to exotics like lantana.

[2] The National Forest Commission endorses the recommendation of the Forest Policy of 1988 that one-third of the landmass of India should be under tree cover, with 60% in the Himalaya.

[3] The Commission is of the considered view that there is no need to amend the 1988 Forest Policy. The recommendations made by the National Forest Commission can be adopted within the broad framework of the existing Forest Policy of 1988.

[4] Within the broad parameters of the National Forest Policy, each State should have its own forest policy statement, for the sustainable management of its forest and wildlife resources.

[5] Making provisions in a National Forest Policy/State Forest Policy statement cannot achieve the desired results unless these are properly implemented. A mechanism needs to be put in place at the Ministry of Environment and Forests and State levels to monitor implementation of forest policy provisions and suggest rectifications.

[6] The Indian Forest Act, 1927, needs revamping, taking into account current requirements, inter alia:

(a) The revised version must give emphasis to the conservation of forestlands and not only forest alone. It must address itself to the ecology, biodiversity and overall significance of forests including grasslands and wetlands and to forests as a biotic community and as a life-supporting factor to the local communities and to the populace downstream.

(b) The term `forest` needs to be defined for the purpose of the Act

(c) Non-timber Forest Products need to be defined.

(d) Bamboo, including ringal and cane must be included in minor forest produce and excluded from `tree`, under Sec. 2 of the Indian Forest Act, 1927.

(e) There needs to be greater control over unsustainable biotic pressures - especially over grazing and tendu leaves, sal seed and fuelwood extraction.

(f) Powers of summary eviction of encroachment may be vested with the local Divisional Forest Officer. 341

(g) Limits of penalties prescribed under the various sections of the Act be raised and there need to be more warrant cases.

(h) Responsibility of prevention and control of fire needs to be fixed upon those responsible for the management of the forest concerned and punishments for non-compliance, have to be provided for and should be stringent.

(i) Forest officers should be given the power of confiscation, including of vehicles used for illegal purposes under the Act.

(j) A Central Board for Forestry with adequate functions and powers be set up.

(k) Indigenous knowledge of the forest communities and their intellectual property rights in this regard need to be safeguarded.

[7] Felling regulations on private lands may be restricted to `Highly Restricted Tree Species`, meaning such endangered and valuable tree species which are almost entirely found in forest areas. Some examples are sandalwood, red sanders, rosewood, khair, sal, deodar, bhojpatra, taxus, Quercus semicarpifolia.

[8] Transit rules /regulations are preventive tools for forest protection and should continue on such highly restricted and endangered tree species only and there should be no restriction and regulation on the felling and removal of other trees planted on private holdings.

[9] Under the Land Ceiling Act, no land ceiling shall be imposed on land under plantation of forest tree species. This will motivate the corporate sector and big farmers to invest in plantations.

[10] As regards saw milling regulations / rules,

a) The state government should assess the demand and supply of wood.

b) The working capacity of the sawmills should be assessed by the respective State Government.

c) The number of licenses should be based on the legal and ecologically sustainable timber supply and the working capacity of the sawmills.

[11] In respect of the Biological Diversity Act, 2002, no agency has been identified for the implementation of this Act. The implementing agency may be the Forest Department (FD), in coordination with other agencies, in areas under the control of the FD.

[12] With respect to the Environment Protection Act, 1986, no agency has been identified for the implementation of this Act at the field level. The Forest department may be considered as an implementing agency for this Act in areas under its control. It may coordinate its efforts with those of other agencies.

[13] The Forest Conservation Act, 1980, serves its purpose only in its existing stringent form. It may not be diluted or made less effective.

[14] In respect of the Wild Life (Protection) Amendment Act, 2002,

a) List of endangered species in different schedules needs to be periodically reviewed

b) Species may be added or deleted to the list on the basis of review

c) Rules for community reserves and Conservation Reserves need to be framed.

[15] As a statewide application may not be feasible to implement, it is recommended that specific crucial grasslands be selected for effective conservation, as part of the protected area network, or as a part of watershed management under the Environment Protection Act. Grazing would have to be regulated and fires prevented. Each area must have prescribed management practices, the

emphasis being on harvesting grass rather than grazing it, which would result in augmentation of both the generation of grass as well as its nutrition value.

[16] A policy should be formulated to regulate inter-state movement of livestock to enable the States to control grazing pressure on eco-sensitive areas.

[17] The animal husbandry departments should relate the number of goats and sheep to the availability of natural fodder especially in such areas where these animals could cause further degradation to natural ecosystems.

[18] Efforts be enhanced to improve cattle quality, as it is proven that improved varieties tend to be stall-fed and sent less to free-graze on rangelands.

[19] The provision of a sustainable supply of fuel be undertaken by a newly created Fuelwood Mission. Not only will this mitigate the drudgery of millions of women who have no option but to forage for every possible scrap of fuel, but also will reduce pressure on trees and shrubs whereby our remaining forest and trees will be well-protected. This can be started initially with a phased programme in and around forests and protected areas.

[20] Alternative sources of fuel, especially liquid petroleum gas [LPG] connections, need to be provided to rural areas in and around forests. Solar energy also needs to be given a much greater impetus, especially in the mountainous and other areas where energy needs are greater and the sunshine available for a greater number of days in a year

[21] The sale of fuelwood head loads from forests by individual sellers must stop. Head loads should only be permitted for bonafide personal use of the local communities, as earlier. The forest departments should bring out fuelwood to depots and supply wood to those who are the current head loader-seller and who derive their livelihood from such sale, at subsidized / no loss basis, rather than the head-loaders being allowed to go into the forest.

[22] In the interest of the survival of the land, people, forests and the practice of shifting cultivation itself, jhum be regulated to a more sustainable level. This can only be achieved by the State Governments themselves, with active assistance of the Government of India.

[23] Some young members of the present generation of tribals are not keen to continue with jhum in many areas, and jhuming itself is becoming less and less remunerative. People are looking for alternatives like settled agriculture, horticulture and animal husbandry, which must be extended to them forthwith. Recommendations made to wean away the `jhumias` of the Northeastern states under Chapter 10, would also apply here as well.

[24] The main objective of forest management should be ecological security. For assessing the effectiveness of forests in contributing to ecological security on the basis of a number of parameters and paradigms such as volume of growing stock, biodiversity, health of forest soil, soil moisture, hydrology, carbon sequestration and crown density, the scope of work of the Forest Survey of India (FSI), Dehradun should be expanded and adequate infrastructure be provided for this purpose. Monitoring of ecological security should be done at five year's interval and a national level report should be published by the FSI. In addition, the FSI should undertake research required to conduct necessary forest surveys and assessments.

[25] In order to ensure that forests meet the emerging and increasing needs of society, their conservation and management on scientific principles to enhance their ecological contribution and to increase their productivity, is necessary. A wellconserved and managed forest is very efficient in ensuring ecological security. For intensively and sustainably conserving and managing forests and improving their productivity, required resources, both physical and financial, should be made available in accordance with the provisions of the approved Working Plans.

[26] Perhaps the most important contributions that the Central and State Governments can make to achieve the above objective, is to give forest conservation unstinted political support, without which financial and infrastructural support, crucial though they are, will not achieve the objective.

[27] The future challenge to the forestry sector in India is to create an enabling environment to facilitate assessment, monitoring and reporting on national level criteria and indicators. These should be assessed periodically, through a set of simple formats to assess changes. Sustainable forest management (SFM) and its threshold also need to be defined.

[28] There should be appropriate rural development and animal husbandry policies and projects to address issues of grazing and fodder for cattle. The grazing requirements of livestock of villages located in and around forests (within five kilometers), should be addressed within the carrying capacity of forest areas. The practice of unregulated grazing should gradually be replaced by stall-feeding.

[29] The medicinal plants growing in forest areas play a very important role in primary health care of neighboring communities who do not have access to hospitals or cannot afford to buy costly medicines. Besides, the knowledge of these medicinal plants is an intellectual property right of the forest dwellers, which must not be allowed to be lost. Special programmes should be undertaken by the State Forest Departments to conserve, manage, scientifically harvest and sustainably utilize medicinal plants found in forest areas. This endeavor, however, should not involve the removal of any forest cover, nor put at risk forests or forest ecology, either in propagation of medicinal plants or in their harvesting or removal.

[30] Forests must play an important role in the sustenance of forest-dependent communities, especially the tribals, living in and around forests. While assessing the results of past systems of forest management in the Working Plans, the contribution of forests in sustenance of forest-dependent communities should also be assessed and recorded while revising the plans. The Working Plan

prescriptions should clearly prescribe measures to enhance the contribution of

[31] For about two-third of the country's rural population living in areas where there are no forests, fuelwood demand should be met from agroforestry and farm forestry supplemented by agricultural 'wastes', biogas, liquid petroleum gas, solar energy, etc. There needs to be a very clear policy that each land owning family in rural areas should grow sufficient number of trees on its land to meet its fuelwood requirement. It can be dovetailed with the agriculture policy in India wherein emphasis should be given to raising fuelwood for domestic needs, on private, communal and wastelands.

[32] Approximately 1.73 lakh forest fringe villages/habitations, which are within and on the forest fringe, should be given special attention to provide substitution to wean them away from dependence on fuelwood. In this context a special programme could be developed to provide alternate energy, such as liquid petroleum gas, solar energy, biogas, etc.

[33] The sale of fuelwood by individuals must be stopped. Persons requiring the fuelwood could obtain their requirement as per the norms of Joint Forest Management (JFM) /Gram Van based on sustainable use, but only the Forest Department (FD) should be permitted to extract fuelwood from the forest for sale, which should be on no loss no profit basis. Wherever FD is unable to provide this facility, it could be entrusted to the concerned JFM institution / Gram Van.

[34] Attainment of self-sufficiency in forest products should be an important goal at state and national levels. For assessing country's self-sufficiency in forest products, database of demand and supply should be created and regularly updated at the state and national levels. At the time of formulation of five-year plans, strategies to meet forest product demands should be critically analyzed and appropriate programmes prepared and implemented to achieve this goal.

[35] Joint Forest Management / Gram Van, particularly that which concerns areas undergoing significant demographic impact, involves a special approach and mindset. This presages specializations and training where sociological issues would be as important as the technological requirement for tree propagation. Such specialization and training, therefore, needs to be adopted

[36] The objectives of management for Joint Forest Management (JFM) /Gram Van need to be revised and clearly stated to broadly include restoration and development of degraded forest areas in order to meet demands for fuelwood, fodder and small timber and also to contribute towards poverty alleviation. It must also be clearly understood by all parties that JFM is a social contract and that benefits and rights would only accrue if the people fulfil their obligations and duties.

[37] The assistance of appropriate non-government organisations and Gram Sabhas/ Panchayats, etc., should be taken in the afforestation activity.

[38] Tree planting in open areas along railway lines, canals and roads, must be undertaken and adequate funds for both tree planting and their maintenance be provided for by the departments concerned. Assistance in tree planting may be acquired from the concerned State Forest Departments wherever required.

[39] Urban population needs to have access to areas of nature and wilderness. Towns and cities may be encouraged to adopt suitable areas available near by, where areas where they can have communion with nature and at the same time forest and wilderness in the proximity of urban habitation could be nurtured and preserved.

[40] The concerned municipal authorities need to prepare master plans for parks and green belts, selecting site-specific plant species for propagation. Cooperation of the State Forest Departments may be required in this regard.

[41] Appropriate flowering and shade tree seedlings should also be made available to private house owners.

[42] Management plans need to be prepared for tracts holding substantial natural vegetation and vested with the military, paramilitary and police and the overall authority in charge of management assigned. The effort should be to both preserve as well as propagate natural vegetation and wildlife in so far as these do not affect the functions of the area.

[43] If any forest / habitat linkages with other natural vegetation growth/forest area exist outside of these properties of the army, paramilitary and police, that continuity should be maintained by the authority in charge of that area.

[44] If any harvesting of forest produce is to be done from the areas with the army, etc, any surplus should not be sold in the open market, but first offered to the neighboring people to cut and carry away, under the supervision of the officer in charge.

[45] The State Forest Departments should cooperate with the officers in charge of these areas to both preserve and augment their natural resources.

[46] A number of forest areas have been declared protected areas as wild life sanctuaries and national parks to conserve endangered wild animals, but not much thought has been given to identify and declare forest areas as protected areas, which are rich in plant diversity. Areas having populations of endemic and endangered plant species should also be declared as protected areas and all the forest sub-types of India should be covered in the network of such protected areas.

[47] Water is one of the most important factors in increasing productivity and forests play an important role in maintaining sustained supply of water in the rivers and streams for irrigation, drinking, industrial and various other uses. Hence special emphasis should be given on water conservation and water harvesting, which can improve productivity substantially and will help in making more water available to mitigate the water crisis. Water conservation in forests, therefore, deserves special attention and should be an important objective of forest and grassland management and adequate financial resources should be provided and should form an integral part

of every forest working / management plan.

[48] The Ministry of Environment and Forests should evolve a detailed mechanism for multi-stakeholder partnership comprising communities, governments and private bodies for funding increase in forest cover.

[49] There should be some code for management of areas under forest/tree cover not under the control of the State Forest Departments and incentives should be provided for retaining tree growth for ecological security. The Government has an obligation and must play an important role in extending technical advice to them for increasing both tree-cover and productivity.

[50] Unclassed forests should be covered under working schemes/working plans which should incorporate recorded rights and concessions of the people, and portray the genuine bona fide personal and other needs of the local people.

[51] Fires extending over 20 km² of forest and grasslands should be declared as a disaster by the concerned State Government.

[52] Fire prevention and fire control deserve to be given a far greater importance than at present. Techniques need to evolve that are more appropriate and equipment provided, keeping in view the experience gained from a UNDP-assisted project of the Ministry of Environment and Forests in the 1980s. Entries in annual confidential reports of every field staff should reflect the work done or not done vis-À-vis fire control.

[53] Since fire cases are underreported, in terms of number of occurrences, the qualitative damage caused and the area affected, by the field functionaries, a mechanism should be developed for higher authorities to crosscheck these reports.

[54] Protection against insect pests and diseases is not given the attention it deserves. Consequently, the productive capacity of forests is reduced. The loss in nurseries and plantations is also sizeable. Strong research support is needed to provide protection against diseases and pests.

[55] The use of pesticides, insecticides and rodenticides be regulated so that applications are done in consultation with the local wildlife departments in areas where threatened species occur and species-specific test be conducted before application.

[56] Practices such as coating of seeds with pesticides be discontinued for less harmful measures or biological or organic pesticide methods be used.

[57] The Agriculture and Forest Departments, Ministries concerned and Commissions set up by the Government of India coordinate, so that a holistic management of pesticides and their application are carried out, which would prevent the longterm damage to the land, air, water and species including man.

[58] Environmental impact assessments that are mandated for every developmental project of a certain size must be carried out scientifically, in an un-biased manner and with enough autonomy. Such assessments must not only deal with pollution and deviation of forestland, but also with effects to water sources, species and local communities. Such clearances must necessarily be taken before the starting of any part of the project, so that a clearance is not redundant or a fait accompli.

[59] Conditions made at the time of project clearance must be enforced. This would require periodic monitoring. If any significant condition is not fulfilled, the authority that has imposed the condition must have the power to bring the project to a halt till the deficiency or omission is rectified. There must not be any ex-post facto clearance or approval.

[60] Ecologists, environmental scientists and conservationists must be involved in developmental projects so that they may be conducted in as ecologically sound a manner as possible.

[61] Greater integration must take place at local and regional levels between government departments involved in developmental projects and those involved in forest and nature conservation.

[62] The Ministry of Environment and Forests, and State Forest Departments should create awareness and special cells to address the menace of invasive species. A policy document should be developed on the introduced and invasive species. Deliberate or misguided introduction of an invasive species should be considered as an offence.

[63] A cell or nodal point needs to be established in the Ministry of Environment and Forests to monitor the status and control of exotics, perhaps in collaboration with the Forest Survey of India and the Indian Council of Forestry Research and Education, and to prepare and issue guidelines for restorative ecology to curb and remove exotics and regain indigenous biodiversity. The implementation of these guidelines and directives also needs to be monitored.

[64] Research to find safe, biological or other applications for the control and eradication of weeds without the use of pesticides needs to be urgently started under the aegis of the Indian Council of Forestry Research and Education. Very little if at all has been done in this regard so far.

[65] Attempts should be made to find commercial/consumptive use of exotic weeds so as to encourage their exploitation. The Indian Council of Forestry Research and Education and the Indian Institute of Forest Management should be involved in this expertise.

[66] It is essential to start special schemes by the Ministry of Environment and Forests and State Forest Departments (especially of Rajasthan, Gujarat, Uttar Pradesh, Maharashtra, Tamil Nadu, Andhra Pradesh etc) to protect their grasslands.

- [67] A centrally sponsored long-term scheme called Project Marine Ecosystems is necessary to focus attention on this aspect. As millions of fishermen would be involved in protecting and sustainably harvesting biodiversity, it is necessary to involve the Fisheries Department, Navy, Coast Guards, etc.
- [68] Establishment of a central coordination unit within the National Institute of Oceanography that will oversee coordination and implementation of the abovementioned policies and maintain a resource database, is necessary.
- [69] Review and assessment of the impact of priority lending in the fisheries sector (a five year action plan), is necessary.
- [70] Special plans for the dugong, giant clams, sea horses and finless porpoises and their respective habitats, should be prepared.
- [71] Corals are threatened everywhere for various reasons and would be more so with both for the conservation of corals and of biodiversity, as well as for coastal conservation. Marine protected areas need to be established for this purpose.
- [72] Management plans for coastal and shelterbelt plantations, which include mapping of habitat utilization patterns including sea turtle and sea birds nesting beaches, should be prepared.
- [73] There is an urgent need to establish trans-boundary protected areas and monitoring mechanism, specially for corals, sea turtles, dugongs, whale sharks and whales.
- [74] Strengthening of the coastal regulation zone in the wake of the recent tsunami tragedy is vital.
- [75] Establishment of a dedicated IFS sub-cadre for conservation and a training centre for coastal and marine biodiversity conservation and management, are necessary.
- [76] An Institutional mechanism to empower Coast Guards to enforce the Wild Life (Protection) Act, 1972, must be considered.
- [77] Mangroves should be officially classified as forests and mangroves found anywhere should be placed under the control of State Forest Departments. The important mangrove areas need to be made Protected Areas if they are not so covered already.
- [78] A concerted effort needs to be made to undertake plantation of mangroves wherever possible along the creeks, estuaries, deltas and shores, and of appropriate species of trees as wind brakers along the coastline and the dunes that back them.
- [79] A National Wetland Conservation Act should be framed.
- [80] Inclusion of all types of wetlands (freshwater, coastal, marshes, swamps, mangroves, waterlogged areas) in the land use classification in the country should be done.
- [81] A National Wetland Biodiversity Register should be started.
- [82] An inventory of `user groups` also should be prepared while collecting information for the biodiversity register. It should also list out the priorities of the communities on particular wetland resources.
- [83] To establish a National Wetland Inventory and Monitoring Programme and a National Wetland Information System and therefore, to develop a sustained and serious programme for monitoring wetlands
- [84] The economic evaluation of wetlands must be computed and it must be integrated with National Resource Accounting.
- [85] Wetland productivity studies on a long-term basis by identified organizations from different parts of the country need to be undertaken. This would bring out indisputable data on wetland productivity, which is many times more than that of other ecosystems. Moreover, it would be an excellent tool to check the wetland ecosystem health
- [86] International links and cooperation involving trans-boundary water issues and conservation of shared wetlands are important.
- [87] At the outset, the Government of India should take leadership and commission a state-wise survey of people-conserved areas which would be appropriate to be designated as community reserves, and have them notified by the respective State Governments and then have management plans prepared for them providing annual financial inputs for specific items in the manner that is given to national parks and sanctuaries. A special centrally sponsored scheme needs to be prepared by Ministry of Environment and Forests in this regard.
- [88] The people of the communities concerned must be encouraged and actually involved in conservation efforts. Their pride in respect of the Reserve must be acknowledged and enhanced. They must be made honorary wardens of the community reserve under the provisions of the Wild Life (Protection) Act.
- [89] Governments must exercise caution in theoretically accepting or advocating the involvement of local communities in the preservation of wild fauna, other than where the communities themselves are protecting fauna for religious sentiments. While it may not be difficult to involve communities in the protection of forests and grasslands whereby they can derive economic and personal benefit, it is a totally different matter to get local support for the protection of animals and birds, especially those that threaten human life or property.
- [90] Local communities living in and around forest areas be trained in eco-tourism activities, which will not only help ensure their

livelihood security but could facilitate their involvement in forest conservation. The rickshaw pullers at Keoladeo National Park, Bharatpur, are an excellent example.

[91] Urban communities need to be made aware of the impact of their consumption on forest resources. The awareness should mainly focus on scientific, ecological, aesthetic, economic, and spiritual and several other values associated with forests.

[92] Decision makers should also be made aware about the important role of education, awareness and training as a management tool.

[93] The existing textbooks should be revised to incorporate aspects of forest, wildlife and ecosystem conservation with local and real life examples. Although efforts have been made by agencies such as National Council of Education Research and Training and State Councils of Education Research and Training of certain states to introduce new textbooks on environment, a project-based approach and hands-on experience is the key to effective learning. The involvement of non-government organisations in formal education should be enhanced, which can play an important role in providing practical experience in nature conservation. The teacher is an important ally in education for forest and nature conservation. Capacity enhancement programmes through existing training institutes such as the State Council of Education Research and Training and DIET should be held on priority, with the help of institutes involved in conservation education such as the CEE, Uttarkhand Seva Nidhi, Eklaya, Bombay Natural History Society, BVEERI and several other institutes. [94] Efforts should be made to strengthen existing programmes such as Green Corps Programme initiated by the Ministry of Environment and Forests, by providing locale specific educational resources to the schools involved in this activity. Such programmes should involve local groups and non-government organizations in implementation and evaluation of the programmes.

[95] It is recommended that formal training institutes where civil servants and armed forces are trained, need to incorporate forest and wildlife conservation as an important aspect of their induction training programme, as well as in-service training programmes.

[96] State and Central Governments should convey the conservation message much more frequently and vigorously in state sponsored advertisements and Doordarshan-controlled channels.

[97] Industries, which consume forest resources and affect forest areas adversely, should be identified and a comprehensive training programme should be evolved. Industries such as paper, pharmaceutical, mining and tourism could be the focus of such training. Environment-friendly practices adopted by certain industries should be documented and such information should be provided to other industries. The lending institutes, which provide financial support to large infrastructure development projects, should be made aware of potential damage to forest ecosystems. The professional auditors should also be oriented about forest conservation as an important part of auditing procedure.

[98] The role media could play in spreading awareness is very crucial. Forest conservation should be a part of journalism curricula and practicing journalists should regularly be oriented towards issues of nature conservation through workshops, field visits and briefing papers.

[99] Traditional communal hunts - Paradh in Bastar and Akhand Shikar in Simlipal, Orissa - are a bane of the two tiger reserves concerned. While preventing physically these extremely destructive practices, all efforts must be made for the awareness and education of the tribals concerned and by finding symbolic alternatives to these ritualistic hunts.

[100] The forest service should have well defined visions and goals. It is, therefore, strongly recommended that a statement 'Forestry Sector Vision 2020' should be prepared on priority. The National Forestry Action Programme cannot serve this purpose.

[101] Forests that lie outside the protected area network should be sustainably managed through clear working plan prescriptions rather than only having a complete moratorium on felling.

[102] A Forest Conservation Fund should be created to ensure adequate financial resources for forest and wildlife management through levy of a cess on sale of forest produce. Revenue generated from lease of mines in forest areas should be credited to the Forest Conservation Fund. Contributions to be made to the Forest Conservation Fund by corporate companies or individuals should be exempt from income tax.

[103] Corporate funding should be invited for revival of degraded forests. Mechanisms for the same may be worked out.

[104] Joint forest management should be a social contract, a quid pro quo, wherein the exercise of rights and benefits are subject to the fulfillment of specified duties and obligations, e.g. the yearlong protection of forest from fire, grazing, felling and degradation. If the beneficiaries do not fulfill their duties and obligations, they should not avail the benefits occurring from forests.

[105] Currently, a major part of the fund made available to forests is utilized for joint forest management (JFM) activities and inadequate funds are available for proper management of non-degraded forests. More funds need to be provided for the management of non-degraded forests. Half of the forest revenue may be made available for management of non-degraded forests on the pattern of JFM.

[106] For a meaningful partnership, both partners i.e. Forest Department and local communities should be equal partners in joint forest management (JFM). Villagers may provide inputs for protection and some forestry operations through their labour. This approach will lead to a low-cost model of JFM, which is necessary for sustainability of the programme and for improving the benefits from JFM to village communities. Timber obtained by Joint Forest Management Committee members as their share should generate income for them. Sale by individual members and the related problem of illicit cutting in the garb of such sales must stop and such JFM societies need to be suspended.

[107] The objectives of management for joint forest management need to be revised and clearly stated to broadly include restoration and development of degraded forest areas in order to meet local village community (LVC)'s demands for fuelwood, fodder and small timber and also to contribute towards poverty reduction of LVC members.

[108] To give expression to the changed priorities of forests as contained in the Forest Policy of 1988, the working plans and working schemes of forests must give priority to conservation and to the enhancement of biodiversity, and thereby change the focus from the current continuing emphasis on production forestry.

[109] Each working plan should have one chapter on Biodiversity Conservation, selecting compartments, which should be managed to enhance biodiversity.

[110] The nation's biodiversity needs to be assessed and inventoried in detail.

[111] A serious attempt must be made to rationalize protected area boundaries by implementing the recommendations of the committees appointed for this purpose earlier and taking up work in states where there may be no such reports. The leadership and funds must come from Ministry of Environment and Forests. In lieu of the areas that would be excised from the protected areas in pursuance of this effort, the states on their part would add other larger human settlement-free habitats to the protected areas concerned, or to others, within their states. There must be a quid pro quo, with the approval of the Supreme Court. By this exercise, a large number of human settlements on the periphery of the protected areas could be excluded, some huge protected areas which are only on paper like the Solapur Sanctuary in Maharashtra and the National Chambal Sanctuary between Rajasthan and Madhya Pradesh, could be made practical and effective, as smaller sized protected areas. In lieu, other larger trouble-free areas could be added to the protected area system, the caveat being that deservation of inhabited areas from protected areas to be only done after the areas chosen to be added to the protected area system in lieu of those deservations, would be first notified as protected areas

[112] In keeping with the Supreme Court directives, after undertaking a rationalization of park/sanctuary boundaries, those rights that need to be acquired should be acquired and those rights in sanctuaries that can be allowed to be exercised keeping the long-term conservation of that sanctuary in view, should be allowed to continue as per the provisions of the Wild Life (Protection) Act.

[113] In keeping with the 2002 Amendment of the Wild Life (Protection) Act, parks and sanctuaries should be regarded as final and wherever legal action still remains in view of the said amendment, it should be completed in a time-bound programme.

[114] Though it would not be feasible to relocate all the human settlements that would still remain in the protected areas, certain settlements that are particularly problematic because they are in the middle of the protected areas or occupying some crucial habitat, could be motivated to move out voluntarily. The best solution would be to give resident communities a choice of degraded forestland away from the protected area (if non-forest land is not available) and more land than they would surrender, grants for building houses and all facilities that would be available under the National Policy on Resettlement and Rehabilitation, 2003. Non-government organizations must be involved to monitor the requirements of the people and a generous package must be provided. The land must come from the state governments, the resettlement costs from the Government of India, and no 'Net Present Value' would be calculated for the forestland to be allocated. The cost of translocation of villages from protected areas would thus be far lower than that projected (e.g. 3200 crores for 273 villages cited by the Tiger Task Force, 2005) and not all villages are required to be relocated from the protected areas. This work of translocation must be accorded very high priority and the central government must provide the funds in a phased manner,

[115] A clear reason for the establishment of a protected area be established from the outset, i.e. conservation of endangered species, representative wildlife habitat; tourism; catchment area protection of a dam, etc. Every protected area should be given a clear mandate and necessary conservation measures should be taken up with that mandate in mind. The protected area manager should be judged whether that mandate has been achieved, and not by taking easy conservation options. New protected areas should be established in consultation with local people.

[116] Protected area managers do not have a clear mandate, vision and priorities vis- vis the protected area they are in charge of. Most protected areas do not still have management plans. This combined with the protected area manager's lack of knowledge and commitment leads them to undertake 'development' of their protected area through construction activities like road building, constructions, watch towers, etc, which are often uncalled for and even detrimental to conservation.

[117] Each protected area should have a comprehensive management plan, which needs to be followed and revised periodically

[118] The State Governments must forthwith stop illegal activities banned under the Wild Life (Protection) Act, such as the continued exploitation of protected area areas for commercial or other purposes, including collection of tendu leaves, sal seed, harra and mahua fruit, etc.

[119] The financial outlays given to protected areas, and to nature conservation and control of illegal wildlife trade, need to be substantially enhanced. [120] A system should be developed where important records are maintained for posterity in each district/state. Here, proper training to record accurately and scientifically becomes important. A protocol for data maintenance, storage and retrieval should be devised. Each protected area should also develop a library where research reports and papers are maintained.

[121] A concerted effort be made to identify which sanctuary or portions thereof can be upgraded into a national park, where human habitations or rights do not exist or where they need to be acquired on a priority basis.

[122] Whenever possible, protected areas should have linkages with other protected areas and habitats by extension of the protected areas over the corridors - either as national parks or sanctuaries and where that is not possible by establishing Conservation

Reserves or Community Reserves. Tree cover over these identified linkages may also be achieved by encouraging and actively supporting van-vaniki and farm-/agroforestry on private lands. Such linkages be given adequate onground protection and ecologically harmful activities in these areas be restricted and regulated.

[123] Linkages between management actions in protected areas falling in the same biogeographic region must be kept in mind at all times.

[124] In all endeavors and decision making related to wildlife tourism, the axiom would be that tourism must be in consonance with and subservient to the long-term conservation interests of the protected area, habitat or species it relates to, and never the other way round.

[125] Entry into the protected area must be regulated according to an assessment of the capacity of that protected area to absorb vehicles / tourists without impinging on the interest of wildlife and the habitat.

[126] Besides the designated tourism zone, protected area authorities must choose alternate ranges to throw open to tourists on a one or two year rotational basis. In protected areas where there is a heavy rush of tourists, those visiting parks for longer periods may be refused re-admission to the designated tourism zone and first offered entry into the alternate range opened for tourism. In areas of low tourist pressure, the alternate zone may be offered as a choice.

[127] No attempts to develop recreational facilities in the protected area or its buffer area should be permitted. Park managers must ensure that even private sector entrepreneurs do not do so.

[128] Existing tourist complexes should be constructed in a way that they merge with the surrounding landscape and as far as possible use local material

[129] Resorts set up for wildlife and ecotourism must undertake to ensure that at least 60% of their staff and 40% of their salary expenses go to local residents of the area. This must be rigorously enforced, especially in tribal areas.

[130] A clear reason for the establishment of a protected area be established from the tourism; catchment area protection of a dam, etc. Every protected area should be given a clear mandate and necessary conservation measures should be taken up with that mandate in mind. The protected area manager should be judged whether that mandate has been achieved, and not by taking easy conservation options. New protected areas should be established in consultation with local people.

[131] Funds generated by tourism should not go to the public exchequer. Rather they should go for eco-development of the local communities, especially the tribals. A special fund should be created for this purpose, as has been attempted in some states. Donations made by visitors should also go into this fund, which could also cater to the welfare needs of the protected area staff. As funds given by Government of India are often kept back by the State Governments, such funds for individual protected areas could also provide an alternative source or routing financial assistance.

[132] Besides being trained to serve as wildlife guides, local and tribal people should be involved in anti poaching activities. They should also be encouraged to develop and improve local handicrafts.

[133] Protected area authorities must train and certify local wildlife guides to accompany tourists into the park. Any infringement of protected area rules by tourists must be punished by a suspension of the guide for a week in the first instance and for six months on subsequent occasions. A similar discipline should be enforced on vehicles for hire to visiting tourists or even those belonging to tourist resorts in the area.

[134] Interpretation Centres should be developed to provide visitors with an opportunity to learn about the local flora and fauna and the role of the protected area in protecting and conserving the environment and wildlife. These centres can also be used for training the cadre of guides and motivating schoolchildren and youth.

[135] Material in the form of user-friendly guidebooks on the protected area's, giving maps, flora and fauna and some information on the important rivers and other geographical features need to be published. They should also include information on the historical as well cultural importance of the area to make the visit informative and meaningful. as well as the `dos` and `don'ts` while visiting the protected areas.

[136] A system should be developed where important records are maintained for posterity in each district/state. Here, proper training to record accurately and scientifically becomes important. A protocol for data maintenance, storage and retrieval should be devised. Each protected area should also develop a library where research reports and papers are maintained.

[137] The Wildlife Wings and protected areas should be manned by personnel with interest and aptitude. A sub-cadre needs to be developed for this. This would ensure the four prerequisites - selection of the appropriate personnel, longevity of tenure, training and prevention of posting of unsuitable persons. If personnel of such requirements are not available from the IFS or SFS, they should be recruited from the open field.

[138] An ecologist must be available on the staff or as an advisor to the managers of important protected areas.

[139] The protected area managers, and not the territorial authorities of the Forest Department, should have full and effective control over their protected areas, and also of their buffers and corridors to the extent possible. Linkages with the local people should be built up in the buffers.

[140] The Chief Wildlife Warden should have full and effective control, including financial control, over the protected areas and buffers and over the officers and staff, which man them.

[141] The Chief Wildlife Warden needs to make entries in the annual confidential reports (ACRs) of territorial Conservator of Forests, DCFs and ACFs as to the work done by them vis-À-vis nature conservation.

[142] The duties enjoined upon protected area managers and the Chief Wildlife Warden under the Wild Life (Protection) Act, needs to be conscientiously carried out in both letter and spirit.

[143] Training and motivation must be provided to the protected area personnel, including promotional avenues and cadre management.

[144] The forest service as a whole be mandated to combat wildlife crime and undergo basic level training in this regard. For combating specific wildlife crime (poaching, rading and smuggling), training be imparted to field wildlife staff, taking the assistance of specialized technical agencies, governmental or nongovernmental, in doing so

[145] Intelligence gathering be given adequate resources as contingency funds allocated to the Chief Wildlife Warden and managers of important protected areas, and special groups of personnel be trained in it and this be budgeted as a regular part of anti-poaching operations. Wherever possible, special `cells` to deal with organized illicit trade in wildlife be set up and suitable persons from the police or other departments be taken on deputation.

[146] To assist the `cells` to curb illicit trade in wildlife products, expertise in wildlife forensics should be developed in each state, preferably in an established institution or laboratory equipped with the requisite tools, in collaboration with the Wildlife Institute of India.

[147] Each State and Regional Deputy Directors of Wildlife Preservation under the Government of India, should set up computerized database on illegal wildlife trade and the ongoing cases in court. These would feed a national level database in the Ministry of Environment and Forests.

[148] The role of non-wildlife agencies in curbing wildlife crime is to be underscored and they be given adequate mandate, training and incentive to help Government curb wildlife trade. [149] All forest protection staff must have group insurance against death, disease and disability by the state to increase their morale and as a staff welfare measure.

[150] The broad recommendations of the Subramaniam Committee report of 1994, especially the formation of the wildlife crime unit and the provision of legal training and support to wildlife law enforcement agencies, be implemented.

[151] Government should enforce CITES more stringently and cooperate more with other nations in doing so, especially our neighbouring nations, as ultimately this would be in the country`s interest in preventing illegal trade. Recently, the Association of South East Asian Nations (ASEAN) has decided to set up a ASEAN Wildlife Enforcement Network (ASEAN-WEN). Government of India must join the process and both provide and seek cooperation from this set-up, and endeavor to establish a similar set-up for South-Asia or South Asian Association of Regional Cooperation.

[152] There have been numerous instances of wild animals being deliberately electrocuted by cutting overhead wires, amongst them elephants, rhinos and tigers. Livestock and humans have also perished. As far as possible, no electric lines be laid over national parks and sanctuaries and those that exist should be safeguarded against such vandalism and misuse.

[153] Though two new categories of protected areas have now been recognized under the amended Wild Life (Protection) Act, namely, Conservation Reserves and Community Reserves, hardly any new protected area under these two categories have been established. As demographic restrictions envisaged under these two categories are far less than in the case of national parks or sanctuaries, a definitive effort needs to be undertaken by each state to identify and designate protected areas under these two new categories. The Ministry of Environment and Forests needs to undertake a survey to identify areas, which have potential under these two categories of protected areas and need to persuade the States to establish them, providing financial and other support for the same.

[154] Situations in which biosphere reserves can be set up be delineated and it be ensured that they follow the principles as laid down in the Man and Biosphere programme in so far as it is not inconsistent with domestic legislation relating to conservation and management of natural resources. It would also be useful to include biosphere reserves within the legal framework, either through a separate legislation or through its inclusion in the Biological Diversity Act, 2002 or similar legislation.

[155] Biosphere reserves should not be established in lieu of national parks or sanctuaries but when due to demographic factors the establishment of a national park, sanctuary, Conservation Reserve or Community Reserve is not feasible. It would also be improper to impose a Biosphere Reserve over an existing park or sanctuary, as that causes a dichotomy and confusion in approach and management.

[156] Significant wildlife habitats including biological corridors where immediate declaration as protected area is not possible, be designated as ecologically sensitive areas (ESAs) under the Environment (Protection) Act, 1986, (EPA) with a view to restrict certain identified hazardous activities as also change in landuse pattern. Ecologically sensitive areas should also include areas such as elephant corridors, important bird areas, etc.

[157] Specified areas, including buffer zones of protected areas be designated as ecologically sensitive areas (ESA) with a view to restrict identified hazardous activities. This process should be based on a comprehensive and realistic assessment of the current threat perception in the area surrounding a protected area. An ad hoc and arbitrary fixation of ESA, such as a blanket restriction, is

likely to be counterproductive and can create hurdles in the creation of new protected areas (PAs). Control of effluents and emission levels must be enforced and PA managers must be involved in this control activity.

[158] Since the power to declare protected areas largely vests with the State Government, similarly, the concurrent power to declare ecologically sensitive areas should also vest with the state government.

[159] Mitigation measures for man-animal conflict must be both long-term and short-term. Short-term measures may include barriers after considering whether they act as barriers to wildlife movement or not, scaring and repelling techniques etc. Long-term measures must include establishment of animal corridors, elephants being a priority, attempting alternate cropping patterns around forests and areas seriously impacted by wild ungulates and having wildlife clearances as a mandatory part of broader environmental clearances of development projects.

[160] Catching and translocating animals should not be seen as the easiest and most politically-expedient solution to conflict, although it could be advisable in some cases) and must be done only after the troublesome animals have been identified, and when the biology of the species and its needs are taken into account and monitoring measures are in place. Capture of social beings such as elephants in particular is counterproductive to conflict resolution, unless whole herds as social units are translocated. It must be borne in mind that according to the Wild Life (Protection) Act as recently amended, the capture of Schedule I animals should only be done after its release area has been identified and the release must be done in the prescribed time-frame.

[161] Compensation mechanisms must be reviewed and schemes put under way in areas of man-animal conflict. Compensation must be paid immediately and without hindrance, and it must be commensurate with the damage caused and there must be transparency in the whole operation. Attempt should be made to have crop insurance against damage by wild animals around major protected areas.

[162] A very important field of applied research and its extension to field application, which would greatly assist in reducing man-animal conflict, is identification of crops, which could be planted around protected areas and elsewhere to reduce the quantum of crop-raiding by species such as nilgai, blackbuck, wild pigs and elephants. Needless to say, such crops should be suitable for the area and be remunerative.

[163] Except perhaps for the tiger, elephant and rhino, there is no long-term monitoring of most of our endangered species. As birds are easy to monitor and are a good indicator of habitat quality, long-term monitoring protocols should be developed for all our protected areas. Universities and non-government organizations should also take up regular monitoring of birds and other wildlife outside protected areas. The Government of India should encourage and fund animal and bird monitoring and migration.

[164] Prioritizations such as that of Rodgers and Panwar (1988) and others brought out by the Wildlife Institute of India, be seriously considered and gaps in the protection of habitats of endangered species, unique or threatened ecotypes, deficiency in coverage of biome and biographic representation, or some other factor, be rectified by adding on such critical areas to the protected area network. Wherever possible, this should be by establishment of a National Park or Sanctuary. If it is not feasible to establish any of these two categories of protected area, then Conservation Reserves or where land is privately owned, Community Reserves could be established. The help of non-government organizations may be taken in this wherever considered appropriate.

[165] Ex-situ conservation should start complementing in-situ conservation, both from the captive propagation and educational standpoints.

[166] It is essential to store genetic material of gravely endangered species in gene banks, as a safeguard against extinction in the wild, and both the Zoological Survey of India and the Botanical Survey of India should ensure this. At an opportune time, not only can the species be regenerated in captive conditions, but if adequate measures have been taken, can also be introduced into the wild. A very significant development has been the establishment of the Laboratory for Culture of Endangered Species (LaCONES) by the Centre for Cellular and Molecular Biology (CCMB) at Hyderabad, to undertake this important task. All support needs to be given to LaCONES in this regard to save the genes of endangered species and to help recover species from genetic `degeneration`.

[167] As a very valuable experiment both to restore a locally extinct mega-species and to conserve its endangered prey-base and habitat, as well as to inculcate national pride and interest, a serious effort be made to re-introduce the cheetah into the wild in India.

[168] If any captive reared population of any species is sought to be introduced into the wild, it must be carefully and clinically assessed to ascertain that they do not carry pathogens, which could be conveyed to the wild population.

[169] Scientific re-assessment of the status of each species/taxon should be done by experts and thereafter they be reassigned under the Schedules of the Wild Life (Protection) Act. Such reassessment should be done every five years

[170] All those species that are in Schedule I, the Government of India, with the help of State Forest Department and experts, should start Species Recovery Plans. Sufficient funds and expertise should be provided for Species Recovery Plans. The aims should be that once these Species Recovery Plans are successfully executed, and the status of the species is improved, it could be down listed to Schedule II or Schedule III. It should be considered a credit to the Ministry of Environment and Forests and the concerned state Forest Department that a species has recovered and is no longer under threat of extinction. For some species it may take 15-20 years to recover, but it should be seen that systems are in place that help the species to recover. Periodic monitoring of the status of each species would be very essential. At the same time, if status of a particular species deteriorates, it should be upgraded to a higher Schedule and a Species Recovery Plan is started. Even for so-called common species, whose populations are on the decline, there should be targeted recovery plans, mainly by saving their habitats. An indicative list of species for whom recovery plans need are a top priority, are: Malabar ivet, hangul, , wild buffalo, Nicobar megapod, Andaman teal, white-winged wood duck, pygmy hog, greater adjutant stork, Ladakh ural, Gangetic dolphin, Jerdon`s courser, vultures, and greater one-horned rhinoceros

[171] Project Elephant and Project Tiger have shown that by targeting rare and flagship species, many habitats and associated species can be saved. However, there are many species/habitats that are not covered by these two Central government schemes, e.g. grasslands, wetlands, high altitude mountain, riverine and marine environment. Certain species and their habitats need urgent attention of the Ministry of Environment and Forests and state governments to formulate projects in the fashion of Project Tiger. The snow leopard, the great Indian bustard, the Gangetic dolphin and the dugong are prominent examples for this purpose.

[172] To protect the highly endangered great Indian bustard (less than 500 left in the whole world), lesser florican, Bengal florican and other grassland associated flora and fauna, Project Bustard should be initiated. As protection of grasslands would greatly benefit livestock, the Ministry of Agriculture and Animal Husbandry should also be involved. These bustards are found in at least ten states of India and therefore, it is vital to develop a centrally coordinated and funded scheme.

[173] The snow leopard of the Himalaya is one of the most famous flagship species of the ecosystem where it lives. This ecosystem is also very fragile and coming under increasing human impact. Most of the rivers of north India originate from snow leopard habitats, so it is in the national interest to protect and nurture such habitats. As the snow leopard is found in five states (Jammu and Kashmir, Himachal Pradesh, Uttaranchal, Sikkim and Arunachal Pradesh), it is necessary to develop a centrally funded and coordinated scheme called Project Snow Leopard. An attempt had been made in this direction in the 1980s, but Ministry of Environment and Forests later merged the scheme with the on-going C.S.S on development of national parks

[174] The lion has established permanent habitats in the Girnar, along the Saurashtra coast, Hipavadli in Amreli district and elsewhere. The Government of Gujarat should declare Girnar as a sanctuary and bring the outlying lion population in Saurashtra within an overall lion conservation programme, and approach the entire lion populations on a zonal or landscape basis.

[175] India has five species of sea turtles and the world's largest known turtle breeding beaches for the Olive Ridley sea turtle (Gahrimatha, Devi and Rushikulya river mouths in Orissa). Mechanized fishing trawlers have created new problems for these sea creatures, as they have to come to the beach to lay eggs, sometimes twice a year. As the turtles found near the coasts of West Bengal, Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Maharashtra, Goa, Gujarat and Andaman and Nicobar Islands face various problems, some general and some site-specific, a centrally-sponsored scheme is necessary to save them. Moreover, the State Forest Departments are not geared to protect turtle habitats. Only a long-term central scheme would be effective.

[176] The terrestrial tortoises are today one of the most threatened group of animals in the country. The commonest species, the star tortoise, is affected by illegal trade. The Travancore tortoise and the Assam tortoise are gravely endangered due to habitat destruction and other factors. Recovery Plans are needed for these species.

[177] The Wildlife Institute of India, in collaboration with countries/organizations which have the requisite expertise, must evolve techniques suitable for group capture of species like the nilgai, blackbuck and wild pig. After due testing, the techniques should be transferred to the states, who should set up special 'cells' for such capture and translocation.

[178] Thereafter, locally excess animals and those that are proving to be intractably harmful to crops and other property, need to be captured, relocated and rehabilitated where they could be accommodated without causing the same problems to the local people. In this endeavor, the Government of India should render financial support, at least in the initial phase.

[179] In this operation, every effort must be made to reduce the trauma and injury and the chances of contraction of pathogens during captivity. The period of captivity must be very short.

[180] After careful analysis and overcoming or mitigating the factors leading to local extinction or reduction, certain species need to be re-introduced in some protected areas. For this again, special techniques for capture and translocation need to be evolved. Some examples of this category are the reintroduction of rhinoceros and the eastern swamp deer in Manas; the gharial in the Brahmaputra and Beki in Assam; the gaur in Bandhavgarh; the blackbuck in Kanha; the tiger in Sariska; the wild buffalo from Indravati to Barnawapara in Chhattisgarh or Kanha in Madhya Pradesh; the hog deer in Corbett National Park; the pygmy hog in Nameri National Park and elsewhere in Assam and, of course, the lion in Kuno-Palpur in Madhya Pradesh. Besides, the possibility of introducing the brow-antlered deer from the captive populations, in Pobitara in Assam, needs to be explored. This would be a special case of introduction into a new habitat, as its previous habitats in Manipur are now not viable any more and the total world population of this taxon is now confined to the Keibul Lamjao National Park in Manipur. All endeavours must be made to bring back the Siberian crane to Bharatpur, if necessary, from the more numerous eastern population now migrating between China and Russia. The need to undertake a re-introduction of the cheetah in India, after careful study and prior preparation, has been mentioned elsewhere.

[181] The re-introduction of the lion in the designated protected area of Kuno-Palpur be expedited on a priority basis. The Chairman of the National Board of Wildlife could request the Chief Minister of Gujarat for the translocation of lions that have strayed out of the Gir, to the project site of Kuno-Palpur.

[182] Studies be undertaken by the Centre for Cellular and Molecular Biology of Hyderabad to identify the extent of genetic 'swamping' occurring in the current populations of wild buffalo and in sample areas in the case of the red jungle fowl and wild pig. The studies also need to identify the surviving populations that can be termed as truly wild and parameters to judge the wild specimens of these species.

[183] The same studies should recommend corrective/administrative action to curb the threat and to retrieve the situation to the extent possible, with special recovery plans for the wild buffalo and for wild pig in the Andamans.

[184] Investigations leading to practical recommendations, be carried out to prevent future inbreeding between domestic and wild jungle fowl, pig and wild buffalo, specially around protected areas

[185] In the interim period, a special effort and plan needs to be undertaken to save the surviving wild buffalo populations that are apparently least genetically 'swamped' and at the same time the most threatened, in Chhattisgarh.

[186] The Ministry of Environment and Forests and State Forest Departments develop centres of restoration ecology and to remove exotic species, even from a national park, after thorough investigation. The Ministry of Environment and Forests should develop a nodal agency that should look in to this problem and involve ecologists, conservation non-government organizations and media.

[187] Strict guidelines should be developed for the removal of exotic trees and restoration of natural habitats. No commercial interest should be involved to remove exotic trees and they could be supplied first to the local people as per the provisions of the Wild Life (Protection) Act. However, the money generated from the sale of such timber should go back to the protected area.

[188] The following species are candidates for priority intervention by the Indian Armed Forces, Border Security Force Indo-Tibetan Border Police and coast guards. It is recommended that species programmes be initiated in conjunction with them for these species:

[189] Northern Command - Ladhak: black-necked crane, snow leopard, Tibetan argali, ibex, Ladakh ural, Tibetan antelope and Tibetan gazelle; Jammu and Kashmir: markhor, hangul, western tragopan Eastern Command: clouded leopard, snow leopard, Tibetan gazelle, Tibetan argali, and takin; Orissa: Oliver Ridley turtle Southern Command - Gulf of Mannar: Dugong, corals; Lakshadweep: Leatherback turtle, hawksbill turtle, giant clams and corals; Andaman and Nicobar Islands: Leatherback turtle, hawksbill turtle, dugong, whales, sharks, giant clams, Nicobar megapod Western Command - Gujarat: Dugong and whale shark Central Command - Musk deer, western tragopan, Himalayan tahr and serow

[190] The Indian Armed Forces can arrange environmental training programmes for officers and jawans through their Green Governance initiative. Army training manual on environment can be developed in a structured format, which will then form an integral part of Army training.

[191] Army, Navy, Indo-Tibetan Border Police, Border Security Force and coast guards should also contribute in prevention of smuggling of wildlife products along the borders.

[192] Weaning away of the jhumias from shifting cultivation by improved animal husbandry, horticulture, settled agriculture, apiculture and other appropriate agricultural and pastoral practices and occupations. In this context, it is pertinent to note that the Administrative Staff College of India, Hyderabad has reported (1989) that approximately 4.5 lakh families of this region were practicing shifting cultivation and that the total cost of weaning one family away from shifting cultivation was Rs.50,000. This would have made the total outlay worth Rs. 2,250 crores, which was not too high a requirement if phased over some 10 or 15 years. The situation may have changed, but a detailed assessment of the acceptable alternatives and the financial requirements thereof need to be carried out and given the highest priority in administrative attention and allocation.

[193] While the process of weaning away people from shifting cultivation must be encouraged, in the meantime;

a) Increase security of land tenure for shifting cultivators for both the agricultural and fallow phases by reconsidering the classification of shifting cultivation areas and categorizing them a agricultural land with adaptive forest management in the fallow period.

b) Strengthen and capacitate customary institutions for improved local level governance, management of tribal, community-based natural resources, and tenurial access and control.

c) Reorient existing credit policies to be sensitive and proactive to situations where common property regimes apply.

d) Encourage coordination among different government agencies that have responsibilities for aspects of shifting cultivation especially forestry, agriculture, rural development.

[194] Propagation and sale of medicinal plants in the North-East would be a very promising proposition to provide to the land-owner in the region an alternative to jhuming. A special ecologically sustainable programme needs to be undertaken in this regard.

[195] Bamboo is the most versatile crop of the North-East and its management and protection can be best served if the propagation, cultivation, management, harvesting, value addition and marketing is done through a 'mission mode' and the mandate is with the Ministry of Environment and Forests, Government of India. Bamboo is a fire-succession plant and grows profusely in the North-East. There must be facilities for its commercial usage.

[196] Agroforestry is another very viable alternative. But to ensure its success there should be no hindrance to the harvest, transportation and sale of the produce. Mizoram has taken up teak plantation on a large scale. But the farmers must be enabled to extract this tree without waiting for government clearances.

[197] ICAR Centre at Barapani has developed many models for agro-climatic zone settled agriculture, with horticulture / poultry etc. to make livelihood selfsustaining and remunerative. This activity needs to be encouraged and supported.

[198] The Central Government and the North-Eastern Council must play a much more proactive role in forest conservation and in the phasing out of shifting cultivation. This would include greater financial allocations, more schemes for afforestation, regeneration, eco-development, agriculture, animal husbandry and development of local arts and crafts.

[199] Village Councils and individuals have donated land for the setting up of parks and sanctuaries, and in some instances have sold forestlands as well. Murlem and Dampa in Mizoram, Mehow in Arunachal Pradesh and Nokrek in Meghalaya are some examples. This trend must be encouraged and the local people should be associated with the protected areas and must derive economic benefit

from them through tourism, etc. The people of Murlam are prepared to add another 50 sq km to the Murlam National Park if an alternative road to the village was developed for them and some eco-development activity was initiated.

[200] Wherever possible, Community Reserves under the Wild Life (Protection) Act be set up on community lands and sacred groves called Lyngdohs in Meghalaya and the concerned tribal community should be involved in its conservation and management and a sense of pride in these protected areas should be inculcated. In this respect; A complete inventory of sacred forests in the region should be undertaken. These should be registered either with the Autonomous District Councils or with the State Forest Department under the existing Acts and Rules. The survey for different components of biodiversity in each sacred forest should be completed on an urgent basis. The sacred forests should be brought under the protected area network, including Community Reserves, without altering the land ownership status. The interventions, if at all required, as in case of degraded ones, may be designed by the government agencies jointly with the communities. Due approval must be taken from the traditional institutions administering the sacred forests, before initiating such interventions. There should be an umbrella scheme of the government for conserving the community forest areas including the sacred forests. Development of adjoining community forests areas is essential to meet the biomass needs of the community, thereby reducing the pressure on the sacred forests. Such schemes should be implemented jointly by the Forest Department and the concerned traditional institution. Under the scheme, provision should be made for incentives to the tribal people, who are conserving/preserving the sacred forest. The sacred forests can no more be protected based only on religious beliefs. Therefore, it is essential to educate the people about the scientific value of such forests and the conservation ethos should be blended with the religious beliefs. The diversity of ecosystem services derived from the sacred forests must be recognized and valuation of such services must be done. The policy for adopting the `user pay` principle in respect of these services must be developed and the benefits must be given to the people who are protecting the sacred forests.

[201] In forests, prone to organized or large scale violations or insurgency, special protection staff or para-military forces need to be deployed to prevent illicit felling, encroachment, infiltrations, smuggling and poaching, especially on the international borders and in insurgency affected areas.

[202] The Forest Survey of India needs to be assigned the task of periodically undertaking detailed remote-sensing of the forest areas and tree cover to assess qualitative and quantitative changes, including extent of invasion of exotics and changes in the type of tree cover.

[203] The forest of the various communities, individuals and of the Forest Department itself needs to be cadastrally surveyed and physically marked and mapped. 364

[204] Disputed boundaries between the North-eastern States has created problems of lack of control, resulting in encroachment and illicit felling. Boundary disputes must be settled as urgently as possible, under the aegis of Government of India

[205] There is illegal traffic of wood, wildlife and forest products between the Northeastern States and Myanmar on one side and Bangladesh on the other. This must be stopped by the paramilitary forces on the borders.

[206] Establish the institutional infrastructure for democratic decentralization by creating clear and secure tenure over the forest resource to be decentralized. The respective governments should designate suitable lands in the villages or in urban areas as Village Forests. Chapter III of the Indian Forest Act, 1927 already has provisions for the constitution of village forests on lands recorded as Reserve Forests. Amendments may be made in the section 28 to accommodate all types of lands, not Reserve Forests only, for being eligible to be declared as Village Forests. In such villages or urban areas where Reserve Forests are not available, any other category of forests, or any common land which may or may not have forests but has the potential to be developed as forests, may be notified as Village Forests, or in urban areas, Smriti Van (Memorial Forest), municipal forests, avenue plantations, or green reserves. For the purpose of constitution of VF, a village or an urban area shall be a habitation in which people live as a unit. This unit may not necessarily overlap with the existing revenue village boundary, but has the defining features as enumerated in the Panchayati Raj (Extension into Schedule Areas) Act, 1996.

[207] The Government should develop the framework for creating democratic forestry institutions (DFIs) at primary, secondary and tertiary levels across the whole country with an aim to increasing the efficiency of the ongoing decentralisation. The DFIs at above levels may respectively correspond to Van Panchayat at the village or urban habitation, e.g., ward level, Van Samiti at the block or equivalent level in the urban areas level, and Van Parishad at the district level. A Van Panchayat should have jurisdiction over the respective Village Forest, and should be constituted of all resident adult members of the village, and the membership should be suo moto abrogated once one becomes non-resident of that village.

[208] Government and other organizations should foster local accountability by choosing to work with and build-on on only such democratic forestry institutions, which are constituted by due process of election, or consensus of the cross-section of the participating community. Further, the DFIs should be accountable to weaker sections of the village or urban community (e.g. Scheduled Castes, minor groups within Schedule Tribes, women of weaker sections, widows, womenheaded households).

[209] The responsibility and the powers to manage the forestry resources should continue to rest with the democratic forestry institutions. The democratic forestry institution shall be a member of Panchayati Raj Institutions at the respective level, and for this purpose suitable amendment may be brought in the Panchayati Raj Act, 1993 also. 365

[210] In the initial years of institution building, the Government should subordinate the objectives of forestry management to accommodate the needs of the local people. Disadvantaged sections of the village or urban community must be included at the decision making level of the democratic forestry institutions. Favouring democratic process in the short run will help build institutions able to take up sustainable management in the long run.

[211] Forests should be maintained as a `public good` over which each member of respective democratic forestry institution would

have equitable access. Private tenures should not be created in the forests by way of monopoly lease or regularisation of encroachments therein. In case of diversion of forestlands for non-forestry purposes, or for grant of forestry leases to private or public companies, concurrence of the democratic forestry institution at the appropriate level should be made mandatory.

[212] Ecologically sound traditional practices should be identified, and formally recognized and incorporated in the forest management plans. Similarly, the livelihood strategies of the members of the primitive tribal groups should be properly incorporated in these plans.

[213] The Government should provide adequate funds and fund raising power to enable democratic forestry institutions to fulfil their mandate. The fund raising power at appropriate level of democratic forestry institution may include powers to borrow, levy charges, fines or compensation, raise tax or fees, and transfer funds. Commercially valuable and ecologically sound resource-use opportunities should also be available to the democratic forestry institution in addition to subsistence use of the resources. Accounting standards should be developed, and each level of democratic forestry institution should ensure the maintenance of these standards.

[214] The members of democratic forestry institutions, as individuals or groups, need to be made aware of the opportunities available with other schemes and programmes in the government or the non-governments sector, and should be suitably supported to forge these linkages. Capacity building of officials in this regard should be a continuous process.

[215] Simple but effective extension mechanisms should be introduced to reach the outputs of research to the common people. One such mechanism is establishing Van Vigyan Kendras at the Block level. Where Krishi Vigyan Kendras are operating, these may be made responsible for education, research, training and extension in forestry matters also. The compulsory environment education in schools and colleges should be based on the ecology of the local natural resources.

[216] The Union Government should oversee the decentralization process and provide essential support, including capacity building, to the democratic forestry institutions at all levels to enable them to manage their forests.

[217] Since decentralization of forests is creating a new set of right-regime, the existing records of rights be reviewed in view of the ecologically sustainable capacity of forests, to ascertain the minimum essential requirements of the local community with respect to the forest products.

[218] The country's forests must now be looked upon as ecological entities - regulators of water regimes, watersheds and catchments, gene pools, habitats of wildlife, providers of the needs of the neighboring communities and as treasure troves of the nation's natural heritage. The country's needs of timber, fuelwood, fodder, industrial wood, and medicinal plants must mainly be met with plantation forestry and through agroforestry, which thus must receive much greater attention and support than now. This would also require a change in the role of forests, forestry and forest personnel, with corresponding change in recruitment, training, attitudes and mindset.

[219] Plantation forestry must be on degraded forest areas. It must add biomass, not substitute it, even if the tree growth in such degraded areas would not be as good as in areas requiring removal of existing good forest cover for plantation purposes.

[220] The focus of agroforestry must filter down to the tahsil / block levels. While the responsibility in this regard would rest mainly with the agricultural departments and institutions, the forest departments must cooperate and support by providing quality seedlings and technical guidance and by enabling the farmers to freely harvest, transport and sell their produce. All restrictions on the harvest of trees, transport and sale of timber etc. must be removed.

[221] There needs to be a much greater coordination and close cooperation between State Forest Departments, State agriculture, irrigation, animal husbandry and fisheries departments. If the State agriculture departments are to take a lead in agroforestry, they must take on board forest officers and staff for technical help to the extent required. At the national level, there should be a close collaboration between Ministry of Environment and Forests and the Ministry of Agriculture for the advancement of agroforestry.

[222] Import of timber and import duty thereupon should be regulated to keep agroforestry remunerative to the farmer.

[223] Tissue culture and cloning needs to be practised for multiplication of planting material. For this, quality seed and material needs to be obtained by the Forest Departments. [224] If the forest departments themselves cannot changeover to the new biotechnology methods of multiplication mentioned above, they should establish linkages with approved institutions and registered private growers who would undertake the task for them. Department of Biotechnology has already recognized The Energy Research Institute, the National Chemical Laboratory and the Jainarayan University of Jodhpur for multiplying trees and bamboo through tissue culture.

[225] The need of medicinal plants cannot be met with from forests alone, even with their improved management. There is a great scope for growing medicinal plants on private agriculture holdings, which would require the supply of planting material, marketing assistance, and technical inputs at least in the initial stages, and this must come from the State agriculture departments with inputs from State forest departments as well.

[226] Bamboo has multifarious uses and is in increasingly short supply, especially in the north, central and western India. Bamboo cultivation has great prospects as a remunerative crop under agroforestry and can be grown along field boundaries and in homesteads. Bamboo propagation thus needs to be made a national priority, for State Forest Departments, State Agricultural Departments, and local bodies including panchayats and Gram Sabhas.

[227] Assistance and cooperation of concerned panchayats, Gram Sabhas and appropriate non-government organizations need to be taken in agroforestry extension.

[228] The State Forest Departments must establish appropriate extension services to provide necessary technological support to tree growers. In order to provide single-window-services to farmers, agroforestry extension should be handled by the extension services of

the agricultural universities and agriculture departments. Subject matter specialists in forestry species should be posted at Krishi Vigyan Kendras and in other appropriate extension units undertaking forestry extension.

[229] Wood-based industries should also be encouraged to supply certified quality planting stock to farmers and to enter into buyback arrangements with them for the raw material produced by them. The farmers should be free to sell to the market if they get higher prices.

[230] Liberal credit facilities at lower interest rates may be channelized through banks and other financial institutions to farmers to raise tree and bamboo plantations.

[231] Suitable lands outside village forests, falling in the category of permanent agricultural fallows or wastelands fit for agriculture (e.g. canal side lands), or problem lands (e.g. usar, ravines, etc.), should be assigned to individuals or groups for tree cultivation in any form (including agroforestry, farm forestry, silvi-pasture, horti-silviculture), and suitable incentives should be designed and put in place to promote tree planting on lands distributed to the landless persons.

[232] Ecological relations of species with their environments should be documented.

a) Ecological keystone species in major forest types should be identified.

b) Optional and truly obligate physiological or behavioral relationship among species should be identified and studied.

c) Key agents in biogeochemical cycles and energy flow chains, and quantify the rates of nutrient and energy transfers should be identified.

[233] Genetic markers for identification of plus strains of important tree species for forestry and utilitarian purposes should be developed.

[234] Soil processes in forest ecosystems, particularly aboveground -belowground interactions including role of mycorrhizae in forest regeneration and rehabilitation should be studied, and indicators of soil quality be identified.

[235] Carbon sequestration of degraded forests using forestry practices should be improved, and carbon sequestration by major forest types be evaluated.

[236] The role of coarse woody debris in forest regeneration/restoration should be determined.

[237] Pollutant sensitivity of major tree species and the response of forest to carbon dioxide and nitrogen enrichment should be determined; the impacts of toxins and pollutants in perturbing biogeochemical cycles be considered.

[238] Tree species for urban forest in different agro-climates should be designed and identified.

[239] Biodiversity database for major forest types should be developed and the uses of this biodiversity be examined.

[240] The effect of changes in ecosystem structure and functioning in response to global biophysical and sociological impacts on the delivery of ecosystem services, both tangible and non-tangible, should be documented. [241] The linkage of ecosystem services to human well-being should be determined, and the level of well-being dependency on ecosystem services for different forest systems under different socio-economic conditions be evaluated.

[242] Robust analytical framework and methodological foundations for valuation of ecosystem services and their delivery across social groups should be developed.

[243] Indian Council of Forestry Research and Education should assess the local research needs of States and prioritize.

[244] Forest Departments and the Government of India should encourage universities and organizations to take up research proactively, particularly applied research; the topics/areas for required baseline data collection and research should be identified, researchers be supported, and the findings of applied research in the working / management plans be incorporated.

[245] Research permits, getting of which is a difficult task, should be given without arbitrariness and quickly, provided certain conditions are met. Each management plan should list: i) research required, ii) research carried out in the area, and iii) publications and summary of findings that are relevant to the management plan.

[246] Long-term research on grassland ecology, fire, flood, invasive species, forest regeneration, wildlife diseases, inter-relationships and inter-dependence of species, groups and habitats, multidisciplinary integrated research encompassing scientific and socioeconomic aspects related to protected area management, reintroduction, rehabilitation of species, etc. should be undertaken in different eco-regions with proper funding by the government and provision of facilities by the Forest Department. Research for making use of ethnic knowledge in wildlife conservation and management, and applied research to obtain intellectual property rights capable of benefiting the local communities and the country, should receive special attention.

[247] IC-FRI (Indian Council of Forest Research and Education) institutes should focus on basic research, and on research relating to national or regional problems which cannot be handled by State Forest Research Institutions (SFRIs), such as genetics and tree breeding, wood science and technology, forest hydrology, chemistry of forest products and their utilization, bio-pesticides, global warming, biodiversity conservation and management, forest sociology including participatory management, and forest economics. Strong linkage should be undertaken forestry research in the same State. Networking of scientists working in these research organizations on common problems needs to be done.

[248] A quinquennial review of the research projects should be undertaken by a committee of outside experts in respect of each research institute. An expert committee may be constituted to critically examine and recommend revamping and refocusing forestry research in the country.

[249] The outlay on forest research needs to be very substantially enhanced.

[250] Keeping in view the paucity of personnel in forestry research, certain thrust areas of research in forestry should be put on contract to agricultural or other universities, as well as private institutions engaged in such research activities. Simultaneously, the extraneous posts of research officers in State Forest Departments, who do no research as such but merely help in providing posts for unwanted personnel, should be abolished.

[251] Appointment of faculty should be done through a constant interaction with the State officials. A committee consisting of the director, Indira Gandhi National Forest Academy (IGNFA), one professor, and a representative of the Ministry of Environment and Forests should screen the officers and draw up a list. The officers who have put in a minimum of ten years service and having a very good service record, aptitude and a competence in teaching should only be eligible for appointment. Since there is a dearth of young and willing officers at the level of DCF in the cadres, the faculty positions in the IGNFA should be made flexible and filled up at the level of DCF or Conservator of Forest, depending on the suitability and availability of officers or by getting suitable persons from outside the service. The criteria of selection should not be seniority of service or plain experience, but a combination of experience and aptitude with a greater emphasis on the latter. A detailed guideline of such a selection process should be worked out by the IGNFA in consultation with Ministry of Environment and Forests. Only those members of Indian Forest Service/ State Forest Service should be eligible for selection for a faculty position in IGNFA or training colleges/schools, who must have had at least 10 years service and should have annual reports of not lower than 'very good', besides having an aptitude for teaching.

[252] Seniority should also not be the only criteria for selection of director of the Indira Gandhi National Forest Academy. The Ministry of Environment and Forests should ensure that the officer selected is suitable for this very important post and delivers what is expected of him as the head of the premier forest academy of the country.

[253] The recruitment of the faculty, their assessment and tenure of deputation for the faculties of the Directorate of Forest Education, should be on the same lines as recommended in the case of the Indira Gandhi National Forest Academy.

[254] Keeping in view the low intake at the level of State Forest Service and Forest Range Officers by the State Governments, there is need to review the mandate of the Directorate of Forest Education, the utilization of the existing infrastructure and of the upgradation of the post of the Director, Forest Education.

[255] The Indian Council of Forestry Research and Education (ICFRE) should be granted autonomy on the pattern of the Indian Council of Agricultural Research and the DG, ICFRE should be made Chairman of the Board of Governors, ICFRE. The post of the DG, ICFRE should be made equivalent to the level of Secretary, Government of India.

[256] Since the major clients for forestry research are the State Forest Departments which do not have funds to sponsor paid research projects and there is not much scope for the Indian Council of Forestry Research and Education to generate its own financial resources except for a few externally aided projects, the Ministry of Environment and Forests must increase the plan and non-plan allocation to the Indian Council of Forestry Research and Education for pursuing research activities as per the National Forestry Research Plan. At least five per cent of the revenue from forests should be earmarked for forestry research. The States must increase the allocation to the State Forest Research Institutes, and other research units for carrying out research.

[257] There is an urgent need to review the mandate of the institutes and fix research priorities for each institute/advanced centre, based on themes and regional research needs, to maintain focus on critical forestry issues. An 'Expert Committee' may be constituted to critically examine and recommend the revamping and refocusing of forestry research in the country and which should be need based applied research.

[258] More emphasis should be given on field oriented applied research.

[259] Certain glaring omissions in the field of applied research remain. This was shown, for example, by the sal-borer infestation in Madhya Pradesh. The knowhow to deal with this periodically recurring menace to one of the most widespread and valuable biomes in the country's forests, has made no progress since what was advocated in the 1940s.

[260] There needs to be much greater attention given to research to achieve biological control over exotic weeds like eupatorium, Mikenia, Strobilanthes, lantana, mimosa and parthenium, which are a serious threat to the regeneration of natural forests.

[261] The non-plan component of grants-in-aid must be increased to meet the establishment expenses, so that the plan funds could be utilized for only research activities.

[262] For attending to the State's specific problems and research needs, there should be a separate State Forest Research Institute in each state with autonomy on the pattern of the Kerala Forest Research Institute and these must undertake field oriented research in close coordination with the State Forest Department (SFD). This can be done through reorganizing the Silvicultural Wing of the SFD. The institute should be manned by competent officers and scientists. The useful findings should be widely disseminated. Indian Council of Forestry Research and Education should avoid duplication in their own research work.

[263] Strong linkages must be ensured between State Forest Research Institute, ICFRE (Indian Council of Forestry Research and Education) institutes and agricultural universities undertaking forestry research in the same State. Networking of scientists working in these research organizations on common problems, should be done.

[264] There has to be an in-built system of dissemination of research results to the State Forest Departments, other stakeholders, trainees in forest academy / colleges / schools etc. through conduct of refresher courses, seminars, workshops, electronic and print media. Effective linkages should be established between all the research institutes and the beneficiaries of research. The Ministry of Environment and Forests may devise mechanisms for quick transfer of research results to the stakeholders and receive feedback from them.

[265] Detailed procedures for selection of IFS (Indian Forest Service) officers and scientists on research and training posts should be formulated. The officers with adequate aptitude, experience and real interest in the areas of responsibilities of a particular post should only be appointed. The IFS officers who are not performing must be given one year's time to perform. If they fail to do so, they should be repatriated to their cadres.

[266] The working of the Indian Institute of Forest Management should be reviewed and the curricula of various courses being organized by the Institute should be suitably modified. The `perspective plan` for the faculty must be completed on a priority basis and action taken for filling up all the vacant posts.

[267] The an Institute of Forest Management should publicize its achievements and strengths in the field of forest management, education and training, to improve its image and attract consultancies and projects.

[268] The problems with the staff at the an Institute of Forest Management need to be sorted out.

[269] The Indian Plywood Industries Research and Training Institute must have a detailed vision paper for the next 20 years. The Institute must have constant interaction with industries and other stakeholders for deciding research priorities and other activities to be taken up. Adequate grants-in-aid should be made available to carry on with research and extension activities and for facilitating the work of the institute.

[270] Assessment of research needs of the Wildlife Institute of India should be carried out in consonance with the current wildlife strategy/action plans and policies of the Government of India. The Institute must lay more emphasis on applied research on field related problems pertaining to management of wildlife, especially those related to the reduction of man-animal conflict and to develop methodologies and applications for the capture, translocation and rehabilitation of problem animals.

[271] The Wildlife Institute of India must also devise short-term courses for various levels of forest officers (DCF, Conservator of Forest and Chief Conservator of Forest) which can be sponsored by the Ministry of Environment and Forests.

[272] A thorough assessment of role identification of the officers on deputation should be undertaken to utilize the potential of officers in full, to supplement and complement the needs of the Wildlife Institute of India. Vacancies need to be filled up and the posts allocated to spheres now requiring attention and priority.

[273] Trainees receiving long-term training at Wildlife Institute of India must be posted

[274] Each manager of a protected area should have received training at Wildlife Institute of India. There should be an incentive by way of an allowance, to achieve this end.

[275] The States must fully utilize the `slots` of training available to them at Wildlife Institute of India and indeed, should ask for more than the present quotas.

[276] Develop a dynamic database under the geographical information system domain at the Wildlife Institute of India for monitoring changes in prime wildlife habitats, for facilitating adaptive management.

[277] Establish a special laboratory for forensics and conservation genetics at the Wildlife Institute of India and to disseminate knowledge in this regard to the States.

[278] To grant real autonomy to the Wildlife Institute of India as contained in the Memorandum of Association.

[279] The zonal establishments of the Forest Survey of India (FSI) should be strengthened with enough budgetary and staff support so that more periodic information on forest resources can be made available to State Forest Departments. Since field verification and interpretation of the data obtained through satellite imagery is very essential and is to be done on a time-bound basis, the staff and budgetary requirements of the zonal offices of the FSI should be properly assessed and they should be provided with adequate finances and essential field staff, which can be kept on a contractual basis. Two more zonal offices, one exclusively for the North-East and the other for the western region needs to be established.

[280] The Ministry of Environment and Forests must impress upon the State Governments the need to ensure that the forest training institutions are administered and managed properly and the posts are filled with willing and competent officers.

[281] Forestry personnel have to be equipped with necessary tools for managing forests according to emerging needs of the civil society and in view of the increasing pressures on the forests. Hence, there is need to regularly review the contents of training being imparted to forestry personnel at various levels, at least once in five years, and the training be modified suitably.

[282] The Forest Development Corporations (FDCs), in their current mandate and functioning, are redundant. Their existing work can readily be transferred to territorial forest divisions and afforestation wings, if any. Some of the staff of the FDCs may be transferred with the charge. The mandate and role of Forest Development Corporations need to be reviewed and other functions assigned to

them. The FDCs can also be entrusted with the work of fuelwood supply, to extract and supply fuelwood in lieu of the ongoing practice of sale of 'head load' fuelwood in towns and cities and which therefore can be stopped. The people currently extracting and selling fuelwood could be given fuelwood from established depots of the FDCs and they in turn can sell them. But extraction of fuelwood from forests for the purpose of sale must remain the monopoly of the Forest Department.

[283] The Forest Development Corporations should be given the task of extending forestry to grassland/watershed management in government lands outside of forests, as well as to cooperate with agriculture departments in the extension of farm and agroforestry.

[284] The State governments must ensure that all the administrative and scientific posts in these institutes are filled up in time with competent and willing personnel and adequate facilities and incentives are provided so as to attract the best talent for manning these institutions. These posts must not be a preserve of in-service personnel, but should be filled up with recruitment of the best possible talent, within the State Forest Department as well as from universities and from the open market.

[285] A separate Department of Forests and Wildlife within the Ministry of Environment and Forests should be created to ensure adequate importance and attention to the management of natural resources. Forestry related subjects of biodiversity, mangroves, wetlands, medicinal plants, forestry issues under climate change and combating desertification, which are being dealt mostly by the forest departments in the State governments, should be transferred to the proposed new department, from the Environment Wing. This department should also handle coastal development, National Wasteland Development Board and watershed management in areas having forests, as well as coastal conservation involving the biota. The new department also needs to be given adequate resources to fulfill its duties. [286] On most of the international forestry issues wherein India has a larger stake as a developing nation, generally wider consultations are not held among the forest officials within the Ministry as well as with the State Forest Departments. As a result, in international consultations the country does not get the benefit of collective work experience of a wider section of foresters. Even the officers do not get to know the latest happenings in the sector at the global level, which have a bearing on the development of forestry and wildlife at the national and regional levels. Appropriate mechanisms should be evolved for wider consultations and dissemination of information to foresters at the national and State levels.

[287] Presently, there are no detailed defined duties and responsibilities for various levels in the forestry hierarchy, except the mention of some broad duties in the forest codes/forest manuals of the State Forest Departments. Detailed job description for all levels including that of the ministerial staff should be documented by revising the forest codes and it be given to all the personnel. Need based training for the personnel at different levels should be arranged.

[288] For efficient administration and better coordination among the various wings of the State Forest Department, it is necessary to have a single line command. Only the Principal Chief Conservator of Forest should report to government on policy issues.

[289] Over the last three decades, there has been an immense change in the aims and objectives of managing forests and wildlife resources in keeping with emerging needs of the civil society. However, the structure of the State Forest Departments (SFDs) including the strength of the frontline staff has not undergone adequate changes. The Ministry of Environment and Forestry should undertake a detailed review of the structures of various SFDs and issue appropriate guidelines to States in the next two years, for the restructuring of each State/Union Territory State forest department.

[290] Accountability of officers at various levels in the forestry services needs to be closely laid down and monitored, to improve their performance.

[291] For the welfare of the service (housing, educational facilities for children, conveyance, facilities for maintaining physical fitness, grievances handling and counseling etc.), the State Governments should establish Forest Services Beneficiary Funds.

[292] Professional knowledge of the forest staff, especially the field staff is very poor in respect of the procedural requirements to prosecute a case in court. They need to be provided regular training in legal requirements pertaining to search, seizure, evidence collection and prosecution in court. Legal cells need to be established in each State to pursue the backlog of court cases and in hiring good lawyers in important cases.

[293] In States where the backlog of pending cases pertaining to forest offences is especially large, the High Court could be requested to appoint special courts to hasten the process of law.

[294] Grievance redressal cells should be established at circle and headquarters level to address the problems and grievances of the subordinate staff.

[295] The delegation of administrative and financial powers should be reviewed and for efficient administration and service delivery to the society, there has to be more devolution of these powers to the middle level management and the field officers, with corresponding increase in accountability.

[296] Professionalism should receive priority within the department. Measures to reduce unnecessary administrative work at different levels are necessary, as these consume a major time and attention of senior staff and hampers technical and professionalism improvement and specialization.

[297] The State governments must complete demarcation of forest boundaries, and mutation in revenue records. The process requires financial and technical capacity building of forest settlement offices. A trained team of surveyors be equipped with global positioning system and other technical tools to carry out the process of demarcation. Forest maps should be updated after demarcation and be incorporated in the working plans.

[298] Staff and vehicles of the Forest Departments are requisitioned for non-forestry purposes, the advantage of which is taken by

wood and wildlife poachers. Such requisitioning must be avoided.

[299] In view of prevalent threats to forests and forest personnel who unlike the police have to function alone or in very small units, the forest field staff need to be armed and need to be given protection under the law in the exercise of their duties, as is given to the police and the paramilitary forces, under section 197 of the Criminal Procedure Code. They need to be safeguarded against wrongful accusations under the various anti-SC/ST (Scheduled Castes/Scheduled Tribes) atrocities legislations and need to be provided reasonable and just indemnities in fabricated cases.

[300] Making frontline staff a satisfied lot is a most important tool for achieving effective conservation and management of forest. For this, it is necessary that their housing problem is addressed. Keeping in view the remoteness of the posting of the frontline staff, they are not in a position to keep their families at their place of posting. It is, therefore, recommended that Forest Housing Corporations be created by every State Government to construct primarily family accommodations for the frontline staff. An adequate corpus fund be allotted to the proposed

[301] Forest administration should take advantage of forestry education in the universities by at least giving preference in selection for the posts of forest officers.

[302] Recruitment to forest rangers should be from amongst B. Sc. Forestry graduates produced by universities imparting forestry education. Induction training in the forest rangers colleges will, however, still be necessary for trainees who might already be forestry graduates.

[303] Forestry should be recognized as a subject for competitive examinations in state and All India Administrative Services.

[304] In view of the serious shortage of forest staff at the field level, the general ban by the State Governments on filling up of vacant posts should not apply to the field posts of wildlife guards, forest guards, foresters and others up to the level of forest range officers. Tribal and other backward communities need to be given preference in the filling up of the vacant posts of Forest Guards, and educational qualifications need to be relaxed in the case of such recruits.

[305] The number of beat guards needs to be substantially increased and a revision of beat areas needs to be done state-wise. No change has been done in this regard since before Independence. Each State needs to appoint a committee to go through the exercise of re-delineating beat boundaries.

[306] The field staff is also poorly provided for by way of transport, communication and other facilities required in the better exercise of their duties. A state-wise assessment needs to be carried out and these basic requirements have to be provided to make the field staff more effective for protection work, on a priority basis.

[307] Specialization is a prerequisite in forestry to enable the service to fulfill its role in conserving the forest ecosystems and its biota, in extending forestry within and without existing forests, and in fulfilling the needs and aspirations of the people vis-à-vis forestry. Experience has shown that specialization in real terms can only be achieved by restructuring the personnel setup and setting up specific sub-cadres, by changing recruitment rules and by providing the complementary training and cadre management. Four broad areas of specialization for purposes of developing sub-cadres are recommended. They are:

- a) Forest conservation, including protection, harvesting and sale of forest produce;
- b) Extension forestry, including plantations and nurseries, joint forest management, grassland and watershed management and eco-development outside Reserve Forests;
- c) Wildlife management, including management of protected areas and their buffers and corridors; collection of basic data, control of wildlife trade and taxidermy, etc. implementation of international conventions pertaining to nature conservation;
- d) Research, training, working plans, technical support to agro- and farm forestry

[308] However, a detailed and impartial study needs to be commissioned to define in detail,

- (i) which precise work spheres should be assigned to the respective sub-cadres
- (ii) what should be the required strength of each sub-cadre for the Indian Forest Service and other cadres in the States
- (iii) guidelines for the cadre management of the various sub-cadres.

[309] The same study referred above should also consider as to what changes are required in the recruitment rules for the individual specialized sub-cadres, and the training and training periods required for recruits with degrees in subjects related to forestry and forestlands like botany, biology, zoology, ecology, forestry, ethnology, environmental sciences, etc, and for those recruits who have other science degrees. But weightage has to be given to those recruits who have graduated in subjects related to forestry as against those who have science degrees not related to forestry and ecology, and this should be reflected in the period of induction training. This, in itself, will encourage candidates to opt for relevant subjects in their college education.

[310] It is a regrettable fact that very few amongst the present personnel of all cadres of forest services would opt for the proposed sub-cadres of categories b, c and d mentioned in the recommendation 308 above. They would vie to remain in the traditional work sphere of the service - territorial forest divisions and in the harvesting and marketing of forest produce. This mindset and the lack of specialization that emanates from it, is one of the main reasons for the setting up of specialized sub-cadres. The needs and interests of forestry and forestlands are paramount and hence the services at all levels must be organized to suit the current job requirements, and not the other way around. Once the cadre strength at various levels for categories b, c and d of the proposed sub-cadres are worked out, a certain number of ex-cadre posts would have to be kept in each sub-cadre, so that if an adequate number of appropriate personnel from the existing forestry staff do not opt for them in the initial stages, the required manpower could be recruited from the open field, both through deputation and through competitive examinations. Once the recruitment for different sub-cadres begins and the recruits are imparted the requisite training, the problem of vacancies would not persist.

[311] In order to take care of the training required to be imparted to equip Indian IFS training at Indira Gandhi National Forest Academy should be of three years duration, followed by one year training in the State on different assignments.

[312] Training for the staff at field levels, i.e., forest guards, wildlife guards, foresters and forest rangers, need priority. Direct recruitment may be only at the level of forest guards and forest rangers to improve promotional avenues in subordinate services. All those promoted to the level of foresters and forest rangers should undergo one-year training. No person should be appointed as forest guard, wildlife guard, forester or forest ranger without receiving training prescribed for these posts. It should be ensured that every frontline personnel gets at least two promotions / equivalent pay scales in his career span.

[313] Forestry research and training in the State should be integrated and conducted at the State Forest Research Institute (SFRI). The existing Forest Rangers Training College or Foresters Training School in the State should be upgraded as SFRI. It will help in making available competent faculty for training and will ensure quick transfer of research results to the trainees.

[314] Each forest training institution may have a 'training forest' to be managed by the institution, where all operations should be done by the trainees as a part of their training.

[315] Pattern of staffing in most of the States and union territories is similar, but for the National Capital Territory (NCT), Delhi, where IFS officers are posted as Conservator and Deputy Conservators as per cadre allocation of the AGMUT (Andaman, Goa, and Mizoram Union Territory) cadre, there is no welldeveloped structure of forest rangers and others. It is recommended that cadre strength, and recruitment rules of all categories of frontline staff be framed by government of the NCT, Delhi by making them at par with the other States / union territories; but ensuring that personnel presently working here are not put to any hardship in this process.

[316] A strategy is required for improving productivity of degraded forests (10-40% crown density) by assisted regeneration and afforestation through joint forest management in forest areas near villages, and by the Forest Departments in areas away from the villages. This would involve prevention of fire and effective reduction/elimination of biotic pressures.

[317] A strategy is needed for meeting the needs of construction timber, panel, pulp paper, packaging and particle board panel and chip board industries, through quick growing high yielding plantations of softwoods

[318] A new strategy for social and agroforestry be evolved, which would include planned involvement of forest-based industries in the distribution of high quality seedlings, with buy-back guarantee to the farmers, to ensure qualitative support to the planting programme and market support for the produce. This is to help bring about an additional 10 million ha. under farm forestry/agroforestry and to meet substantially the needs of industry

[319] In order to promote tree plantation on government revenue wastelands, a survey on the availability of such areas be carried out and at the same time some pilot projects involving van panchayats / village communities, government departments and the investor in such plantations, be formulated in states where such land is available.

[320] Establishment of a forum for periodic discussion between Ministry of Environment and Forest, Ministry of Industry and Commerce and recognized associations of wood-based industries, to review and evolve a rational import export policy and review tariff rates keeping in view local demand , supply and market conditions, would be useful.

[321] It is necessary to assess the demand and supply scenario of forest products, including exports and imports, to make projections for 2020 A.D. and to suggest strategies to bridge the gap between demand and supply of raw material for forest based industries

[322] The efforts to develop cottage industries should be concentrated in farm forestry areas. It is also necessary to evolve a strategy to ensure availability of raw material in adequate quantity and quality at a competitive prices to the small entrepreneur. The Khadi and Village Industries Commission, Council of Scientific and Industrial Research and non-government organisations have a major role to, play. Linkages with such organizations /institutions need to be established and strengthened.

[323] Cooperation between forests authorities, community groups and industry is required.

[324] There needs to be a detailed advance planning and more attention given to the formulation of any new international arrangements and agreements at both global and regional levels, pertaining to forests and wildlife, so that interests and needs of the country are well safeguarded.

[325] There also need to be a far more concentrated effort to implement in both letter and spirit, the national duties and obligations envisaged in international agreements to which India is a party, and not just merely participate in the periodic meetings related to these instruments and to give vocal support. Many of these international instruments and agreements including those related to suppression of illegal trade, have a direct bearing on the conservation of the country's biodiversity and natural resources and it is in

India's interests to give full cooperation and seek the same, at both regional and international levels.

[326] There needs to be greater financial inputs provided to fulfil these international obligations, and there needs to be a nodal cell to monitor the follow-up action and implementation of each instrument, within the Forest and Wildlife Wing of the Ministry of Environment and Forests.

[327] We may also learn lessons from other regional instruments such as the Amazonian and Central African and establish regional instruments, at least at the South Asian regional level, for the purpose of achieving cooperation and collaboration of the countries concerned vis-à-vis international commitments and obligations pertaining to wildlife and forests in the Asian region.

[328] The views of India should be framed well before international negotiations and after wider consultation from all stakeholders.

[329] The size of the delegation for the participation in different conventions and international meetings is very small. Since almost one fourth the land mass in the country belongs to the forestry sector and around 28% population of the country have dependence on forests, there is need to have an adequate delegation representing all sectors of the country, including industry, non-government organisations and individual experts.

[330] It was observed that many forest-related international instruments such as the Convention on Biological Diversity, United Nations Convention to Combat Desertification and Commission on Sustainable Development are not dealt with by the Forest and Wildlife Wing of the Ministry of Environment and Forests. This needs to be rectified.

[331] A national level coordination committee for forest resource accounting (FRA) should be constituted to provide technical support and strengthening networking of concerned institutions/agencies, with a view to promote use of FRA at all levels (national/state/local). The committee shall comprise institutions and individuals including economists, ecologists, and physical science experts working in the area of forest resource data generation, valuation and accounting, along with the practitioners. The committee would work out a dynamic formula based upon paradigms and parameters which can be revised from time to time as more data becomes available and better norms get evolved.

[332] The data requirements for natural resource accounting are very high and the Central Statistical Organisation should create a cell or a separate wing to generate the required data on a continuous basis. Major data gaps are inconsistent data from different sources in the forest sector as well as other line departments, and the lack of resource inventory data. Some of the specific data gaps are forest resource stocks and exploitation data, change in forest stock, time series data on ecosystem services provided by forests and biodiversity, data on encroachment, data on resources drawn from forests by industrial units and data on intermediate consumption by industrial units, etc. On account of lack of data from secondary sources, primary level studies need to be conducted to cover varied dimensions to bridge the existing data gaps.

[333] As forests have multiple stakeholders and multi-sectoral linkages, the knowledge generated and the formula of assessment and accounting shall be disseminated in the form of working or policy papers on developing the framework for valuing forests, to guide the formulation of a policy in respect of forest resource accounting, which would then determine the valuation of forests, forestlands and their goods and services and put the assessment of their valuation in its true perspective.

[334] A manual containing basic concepts, methodology for economic valuation and accounting of forests and forestlands may be prepared for handy use by the end users. Necessary capacity building regarding a new system of forest resource accounting should also be done amongst the personnel of forest departments who are expected to be involved in implementing the proposed system.

[335] The new system of forest resource accounting (FRA) proposed through the efforts of the expert group shall comprise tools and techniques of capturing values of tangible and intangible goods and services provided by forests and shall produce a set of accounts for systematically recording such values in the system of national accounts. The proposed system can be implemented at the functional unit level, which may be a division or State level. Since the forest sector is a dynamic sector and any change in it will have a multiplier effect on itself as well on other sectors, it is essential that the exercise of valuation and accounting be taken on a regular basis. For this purpose, it is proposed that the exercise should be made as a component of the existing working plan preparation exercise. As the Working Plan is prepared every 8-10 years, the FRA shall also be automatically done. In fact, if FRA exercises are performed first, important signals can be generated for the new working plan itself.

[336] While fulfilment of requirements of the community from adjoining forests cannot be denied, the fact remains that the 'forests' are a national wealth and their protection and preservation must be viewed from that angle and not only from regional, sectoral, ethnic or political standpoints.

[337] Forest-rich States, which are having forest/tree cover more than the target fixed in the National Forest Policy, 1988, should be provided special incentives to maintain that area under forest/tree cover, but their demand for compensation cannot be acceded.

[338] Forest-deficient States should be provided incentives to increase their forest/tree cover, but the content and approach of this incentive should of course be different.

[339] While there should be no dilution in implementing the Forest Conservation Act and the existing guidelines are fairly balanced, care should be taken that legitimate demands for basic needs should be cleared without any delay, while safeguarding the long term interests of forests, wildlife and the environment.

[340] The National Forest Commission is of the considered opinion that the proposed Scheduled Tribes (Recognition of Forest Rights) Act would be harmful to the interests of forests and to the ecological security of the country. It would be bad in law and would

be in open conflict with the rulings of the Supreme Court. Another legislation, therefore, needs to be framed providing the forest dwelling communities a right to a share from the forest produce on an ecologically sustainable basis and Ministry of Environment and Forests could be asked to do the needful, after taking into account the inputs of the State Governments as recommended by the Sarkaria Commission as a subject under the concurrent list.

[341] Forest encroachments to the extent of 3.60 lakh per annum have already been regularized. If any State feels that any encroachments done prior to 25-10-1980 still remains unsettled, the concerned State governments could appoint commissions, perhaps headed by judges, to finalize the claims within a time frame. Settlement of such claims and disputes arising therefrom should be done by quasi-judicial bodies and not left to the discretion of Gram Sabhas.

[342] The Bill implies that tribals would be permitted to exploit forests for commercial purposes and not only for bona fide livelihood purposes as was originally intended, with only the concerned Gram Sabha empowered to decide as to what exploitation would be unsustainable. The extent and nature of forest exploitation on an ecologically sustainable basis must be decided by forest managers in consultation with the local communities, who would have first charge over any forest produce extracted, to meet their bona fide livelihood requirements, and an economic share of any surplus produce that may be disposed off thereafter.

[343] The proposed legislation should not apply to national parks and sanctuaries, which are the last havens of hope for the nation's forests, wildlife, wilderness and biodiversity. The villagers that remain within them have their pattas and rights and encroachments within them must not be condoned. Many communities themselves wish to resettle outside of such protected areas and this must be facilitated and alternative forestland provided. The politically motivated and ecologically suicidal proposal of providing temporary rights in these protected areas for a period of five years and then if they are not relocated in that period the rights to become permanent, is a mere facade, and considering the past record and political motivations will never be achieved and the grant of such rights will irrevocably impair the ecological viability of protected areas.

[344] The clause that no encroacher should be evicted from forestland under his occupation till the recognition and verification of his claims are completed, with no time limit for such a process, is again self-defeating and will give an impetus and license to more encroachments in forests and to corruption. Such a provision must not apply, at least to national parks and sanctuaries, if not to all forests.

[345] There is an ambiguity in the Bill about the applicability of laws. If the laws of the land pertaining to forests and wildlife are to apply to all tribals and non-tribals, this must be clearly stated and the current confusion about duality in the application of law to tribals and non-tribals, be done away with.

[346] It is recommended that to provide an incentive to the forested States to retain and augment their forests, it would be appropriate if additional allocations could be given by Government of India annually, commensurate to the quantum of forest held by the State and the efforts being made by the State to implement national policies for the conservation of forests and watersheds. Such annual grants must be linked with conservation performance and not just forest area alone. The quantum of annual aid given must have a certain matching grant quotient from the State concerned and which must be in addition to current State outlays on forest conservation and not just substitution of ongoing expenditure and must go entirely for forest conservation and must be directly linked with qualitative and quantitative improvement of forest cover, periodically to be reviewed by the

[347] The allocation to the forestry sector must be increased, both in central and State budgets, and must not be less than 2.5% of the total plan outlay.

[348] To finance the normal forestry operations like fire protection, regeneration etc. funds should be made available to State forest departments, either by increasing non-plan expenditure or covering this under plan expenditure

[349] Whereas the Supreme Court order not to harvest forests as per the working plan prescriptions without getting funds for regeneration must be honoured in letter and spirit, forest working must not be stopped for want of funds and funds must be made available for regeneration.

[350] Funds for plantation should be grouped under two sub-heads - one for achieving plantation target for that year and another for advance work for the next year.

[351] In the subsequent year funds for raising plantation in that year should commensurate with the target set and the funds made available for advance work in the previous year.

[352] 20% funds of all the Rural Development Programme should be incurred on forestry and watershed operations as was done in case of NRER and RLEGP.

[353] All disaster management programmes of the Central and State Governments must have a component of forestry, which should not be less than 5% of the total outlay.

[354] Efforts should be made by Central and State Government to obtain adequate funding from external sources to fulfill the NFAP targets.

[355] Before accepting funding both from donors and lending agencies, the executing agencies namely, the State governments, must provide in real terms matching/required contributions, which should be additions to and not substitution of existing funding, and also make provision for continuing the posts and the programme that have been initiated, after the project has come to an end.

[356] Fund releases should be timely and in keeping with the requirement. Funds should not be held up by the states to improve their own financial ways and means situation.

[357] Programmes under the National Rural Employment Guarantee Act (NREGA) 2005 should also be extended to forestry operations.

[358] Currently, industries pay a 2% cess on water, which goes to the concerned Pollution Control Boards. However, water is a commodity that is regulated by forests and most rivers have their upper catchments in forests. At least half of the 2% cess should go to the concerned SFDs or, more appropriately, the cess be enhanced to 4% with half going to SFDs.

[359] An independent mechanism of the appropriate status be set up to prioritize and monitor the implementation of the recommendations of the National Forest Commission and to draw attention of the concerned implementing agencies where implementation is deficient.

[360] To assess and advise on the conservation needs and priorities of forests and grasslands, of biodiversity and wildlife, and of the civic society in this regard in future, it is recommended that a National Forest Commission be set up from time to time.