

**Forests—Audit guidelines**

## Audit of forests

Forests may be the richest of all terrestrial systems. Tropical, temperate, and boreal forests offer diverse habitats for plants, animals, and micro-organisms and hold the vast majority of the world's terrestrial species. Forest biodiversity provides a wide array of goods and services, including timber and non-timber resources, and it helps to mitigate climate change. It also provides a livelihood for hundreds of millions of people worldwide and plays important economic, social, and cultural roles in the lives of many indigenous and local communities.

Forest biodiversity is being lost due to the rapid deforestation, fragmentation, and degradation of all forest types. According to the Food and Agriculture Organization of the United Nations, there has been an annual net loss of 9.4 million hectares since 1990, the majority of which was natural forest in the tropics. As these figures include the rate of reforestation, the reality may be a loss of 14 million hectares a year or more. Human activity is the most important cause of the decline of forests and their biodiversity, including conversion of forests into agricultural land, overgrazing, unsustainable forest management, illegal logging, introduction of invasive alien species, infrastructure (roads, hydroelectric development, and urban sprawl), mining and oil exploitation, forest fires, pollution and climate change.

Tree planting, landscape restoration, and the natural expansion of forests have significantly offset the loss of primary forest area. Because plantations and secondary forests have a much lower value of biodiversity than natural forests, efforts need to be focused on conserving natural forest areas, rather than replacing them with plantations.

Forestry is an important area for SAIs to audit, because most countries have legislation regarding forests. The mere existence of forest laws, acts, policies and rules however does not prevent degradation of forests and will not by itself contribute to improving the environment unless supplemented by well thought out affirmative actions. Hence this calls for continued and focused attention on the prevention of denigration of the environment through intervention strategies to encourage a holistic evaluation of the environmental needs and planned responses. The Supreme Audit Institution (SAI) with its specific competencies could play an important role in assessing data gaps and even make an effort to examine the state of affairs concerning implementation, compliances and effectiveness of acts, laws, policies and rules. SAIs could provide information not previously reported and also make recommendations for improvement in future. SAIs could in this field meet the cross border character of environmental problems. Best practices in policy design and implementation could be identified and brought to the attention of policy makers at national level and in respective states.

The constraints in the forestry sector, among others, include:

- lack of adequate awareness about the multiple roles and benefits of forests and their relevance to poverty alleviation and sustainable development;
- low priority for forestry in national planning process;

- slow pace of policy reforms and inadequate implementation of regulatory mechanisms;
- over-emphasis on government control and involvement, and difficult administrative procedures;
- weak forestry information system rendering decision-making difficult;
- inadequate investment in forestry, not commensurate with its role in sustainable development;
- inadequate space for private participation;
- lack of full realization of people's participation;
- inadequate targeted research and extension studies;
- inadequate frontline staff and that too of older age group;
- less emphasis on forestry research;
- lack of on-job training and capacity building for forest officers especially for the frontline staff;
- general neglect of full potential of NTFPs; and
- lack of supportive land use policy.

Audit could examine whether government has taken steps taken to address these constraints through enacting appropriate legislation and ensuring their proper enforcement, providing adequate and timely funding, strengthening research and data gathering mechanisms and through capacity building and creating awareness among stakeholders.

#### **Audit methodology**

Regularity (financial and compliance) audits or performance audits of the environmental aspects relating to forests could be undertaken by the SAI in accordance with the INTOSAI Auditing Standards.

#### **Audit objectives**

Audit of forests from the perspective of environment and climate change would be carried out with the objective of assessing whether:

- provisions of the Acts, laws, policies rules and instructions issued thereunder are adequate for conserving forests and maintaining the environmental stability;
- the decisions of the Supreme Court/ High Courts to preserve the environment are being complied with properly;
- management plans were prepared and implemented for conserving the natural heritage by preserving the forests along with the flora and fauna
- adequate and timely initiative was taken for increasing sustainability of the forests/tree cover through massive afforestation and social forestry programmes, especially on all denuded, degraded and unproductive lands;
- periodical surveys of rights and concessions related to the carrying capacity of the forests were carried out;
- mechanism for adequate supervision and monitoring of conservation measures including internal control exists in the forest department.

#### **Audit criteria**

Legislation and regulations for forest practices are usually a good source of audit criteria. Auditors can look at the ways legislation is enforced and at existing policies on forestry. These policies will often include considerations for the sustainable use of forest resources that relate to biodiversity. In many countries, sustainable forest practices have become a rule to follow for forestry companies who want to sell their products nationally and internationally. Governments usually have programs that deal with forest resources. For example, there may be specific programs on sustainable exploitation of timber resources, reforestation of degraded areas, creation and maintenance of protected areas, prevention and mitigation of invasive species, protection of endangered species in forest habitats, and public education on deforestation and burning. In addition, auditors could consult forestry organizations and pulp and paper companies to obtain views from the economic sector. Traditional communities that use forests resources for their survival are also key players in ensuring the preservation of forests habitats.

The following could be some of the specific criteria:

- i) Provision of the Indian Forest Act, 1927, Indian Forest Act, 1980, national Forest Policy, forest programmes, policies, orders, rules and instructions of the Government of India and respective state Governments;
- ii) The decisions of the Supreme Court/ High Courts to preserve the environment;
- iii) Priorities fixed for conservation and protection of forest;
- iv) Management plans prepared and implemented for preserving environmental stability.

### **Audit checks to be applied**

Audit of forests would encompass the compliance, financial and performance of the Government programmes/schemes. Compliance audit would check whether the Government has enacted legislation in pursuance of its international commitments and whether the audited entity is complying with the various policies/laws/rules/regulations relating to protection and conservation of natural heritage framed by the Ministry of Environment and Forests and other Ministries/Departments such as Agriculture, Health, and Water Resources, at the central level and Department of Forest and Environment and other departments at the state level. The compliance framework would be examined to see whether it provides appropriate and sufficient assurance of adherence to statutory legislation.

Financial audit would cover the issues like deforestation which have material impact on the financial statements. Steps initiated to prevent/abate/remedy damage to the environment would be looked into. Consequences of environmental damage done to others or to natural resources as a result of operations could also be examined.

The performance audit will cover the audit of Government's monitoring of compliance with forest conservation and environment laws. The performance of specific programme/projects/strategies to preserve flora and fauna by adding value to the management by way of reliable, objective and independent information highlighting the

shortcomings in performance planning, implementation, information systems affecting the outputs and outcomes specifically and quality of expenditure or management generally.

**Some of the specific areas for audit examination and the audit checks which could be applied are indicated below. The checklist is however not exhaustive.**

### **Assessment of the forest resources of the country and identification of the threats to it**

- Has the government assessed the country's forest biodiversity?
- Does a mechanism exist for carrying out surveys of the natural resources of flora and fauna for mapping the country's natural diversity?
- Has a national database with a uniform format for collection, collation, storage, retrieval and dissemination of data relating to the country's fauna been created?
- Has the government identified the primary threats to forest resources and its diversity?
- Has the government assessed the long-term implications of these threats on sustainable economic development?
- Has the government taken into account studies conducted by other agencies while planning for managing and mitigating each of the threats?
- Has the government has tapped the traditional knowledge available with the local communities for increasing its knowledge of ecosystem functions?

### **Government's role in mitigating threats to forest ecosystems**

- Has the government signed and ratified any international conventions and treaties for the protection of forests?
- What is the extent of implementation of obligations under the international accords to which India is a signatory?
- Has legislation been enacted in pursuance of these international conventions?
- What steps have been taken to enhance international cooperation and prevent banned international trade in forest products under CITES?
- Are the legislations/regulations/policies/programs adequate to address the identified threats? Are these coherent and free from ambiguity?
- Is there overlapping of or contradictions in the provisions of different Acts, rendering their implementation difficult?
- Is there a national strategy on forest conservation and management? Does the government's national forest program help to protect biodiversity and increase the green cover?
- Have long term and short-term goals been clearly defined, milestones set and clear performance indicators established?
- Has the government introduced specific programs for forest conservation, especially for protection of flora which are threatened?
- Has the protected area (national parks, conservation areas, and sanctuaries) network been created?

- Has the government established and implemented recovery plans for endangered flora such as Himalayan yew?
- Has the government taken steps to control and eradicate invasive species?
- Have steps for land-use planning been established?

### **Planning and policy formulation**

- How has the government addressed the issue of access to biological resources and associated traditional knowledge to ensure equitable sharing of benefits arising out of their use to the country and its people?
- Have the planners and policy makers identified the areas of concern with regard to the environment with remedies and interventions as may be required at institutional, regulatory and ultimately policy and implementation level?
- Have the policies, laws, orders and rules been designed/formulated to protect and improve the environment and to safeguard the forests, flora and fauna in the country, as well as to secure the biotechnological capacity building of the country for realizing the actual and potential value of biodiversity?
- Are the policies, laws, act, orders and rules in consonance with the natural system of the country or the state for the achievement of the objective/ goals?
- Are the government's programs prepared based on accurate/reliable data and after identification of risks and the level of threat perception to flora and fauna?
- Was the planning based on assessment of the requirement/ availability of funds?
- Have the policies been formulated by taking into account the stakeholder's perceptions for their implementation in the correct perspective?
- Are the environment appraisal and impact assessment reports supportive?
- Have the policies that lead to the degradation of forest resources and the conversion of forest eco-system to other less valuable uses been identified and corrective action taken by suitably modifying the policies?

### **Forest law enforcement and governance**

- Has the government allocated responsibility to any agency for defining environmental policies dealing with the protection of forests?
- Have judicial decisions on compensatory afforestation, net present value, temporary working permits, ecologically sensitive areas, and mining in forest areas been suitably enforced?.
- Has the total forest area been legally classified as Reserved Forests, Demarcated Protected Forests and Undemarcated Forests and necessary notifications issued for the purpose?
- Have settlement operations been carried out and demarcation of boundaries done?
- Have rationalization and re-organization of boundaries of areas of adequate ecological, floral, faunal, natural and zoological significance been made and included as reserved forest area by issuing notification for the purpose?

- Are stringent laws and administrative measures in place to control illicit felling and illegal timber trade and other forest offences such as unauthorized grazing, cutting of grass, collection of medicinal produce, and other minor forest produce etc.?
- Has the government allocated responsibility to any agency for ensuring that environmental laws are being enforced by private and public entities?
- Has the government allocated responsibility to any agency for preparing environmental standards relating to biodiversity issues?
- Has the government allocated responsibility to any agency for issuing licences to limit the volume or concentration of pollutants discharged into the environment for the purpose of protecting forests?
- Has the government allocated responsibility to any agency for monitoring potential environmental damage and applying penalties when laws are violated?
- What is the role of the Central and State Pollution Control Boards in preventing forest degradation? Was water cess, fines, etc levied on users for damage to forests?
- Are companies being made to pay for ecological damages caused due to illegal mining in forest area?
- Were contains penal provisions to combat measures such as poaching, illicit felling of trees, illegal mining, etc strictly enforced?
- Did the forest department have adequate and appropriate resources at its disposal to carry out its assigned responsibilities?
- What was the requirement vis-à-vis the adequacy of trained /skilled manpower?
- Was there effective deployment of trained manpower?
- What was the age-mix of those deployed in field duties against the established norms?
- Was infrastructure such as vehicles, and communication facilities like hand held radios and arms and ammunition provided to personnel engaged in preventive and enforcement activities?
- Is a wild fire prevention strategy laying down principles, standards and guidelines that apply to fire management on forest land in place to ensure effective, efficient and safe measures?
- Have adequate precautionary measures i.e. managing the threat and occurrence of wild fires especially during the fire season, and the use of controlled burning been taken to control the forest fires?
- Have the causes/reasons for forest fires been analyzed and remedial measures taken?
- Has any forest area been encroached for construction of roads, buildings, projects, agriculture, horticulture and other purposes etc? Have any of these encroachments been regularized?
- Have effective steps been taken to remove existing encroachments and prevent fresh ones?
- Has grazing fees been levied to discourage people in forest areas from maintaining large herds of non-essential livestock?

- Have the forest areas been protected from the problems of biotic and human interferences?

### **Rights and concessions to the Right holders**

Having regard to the symbiotic relationship between the tribal people and forests, a primary task of all agencies responsible for forest management, including the forest development corporations should be to associate the tribal people closely in the protection, regeneration and development of forests as well as to provide gainful employment to people living in and around the forest, while also safeguarding the customary rights and interests of such people,

- Have studies been made about the carrying capacity of forests?
- Was the carrying capacity optimised by increased investment, silvicultural research and development of the area?
- Have rights and concessions been restricted to the carrying capacities of forests and accorded to the right holders?
- Were the holders of customary rights and concessions in forest areas should be motivated to identify themselves with the protection and development of forests from which they derive benefits?
- Has suitable legislation been enacted for right holders/ village communities towards their obligation to upkeep and protect forests and were non-performers deprived of their rights on forests?
- Have integrated area development programmes been undertaken to meet the needs of the tribal economy in and around the forest areas, including the provision of alternative sources of domestic energy on a subsidised basis, to reduce pressure on the existing forest areas?.
- Has livestock management through shift in practices of free grazing by livestock to stall feeding been developed to avoid soil erosion and damages to the forests and natural plantations by livestock population?
- Has desirable composition of grasses, legumes and fodder trees which are potable and high in protein content been introduced?
- Has fodder development been done through people's participation in grazing land and livestock management?
- Were the requirements of the tribals and other poor living within and near forests which could not be met by the rights and concessions determined by law, met by development of social forestry outside the reserved forests?
- Were the domestic requirements of fuelwood, fodder, minor forest produce and construction timber of the tribals made available through conveniently located depots at reasonable prices?
- Has the government taken proactive steps to stop degradation of forest by illegal felling and removal by contractors and their labour by replacing contractors with institutions such as tribal cooperatives, labour cooperatives, government corporations, etc?;

- Have steps been taken for development of forest villages on par with revenue villages?
- Have family oriented schemes been introduced for improving the status of the tribal beneficiaries?

### **Joint Forest Management**

- What steps have been taken to ensure full and effective participation of local communities, in respect of their rights and recognition of their responsibilities in the management of existing PAs and the establishment and management of new PAs?
- What is the extent of coordination between Forest Development Agency at the forest division level and Joint Forest Management Committees at the village level in implementing the NAP?
- What is the extent of community involvement in forest protection/conservation activities and ecotourism?
- Have site-specific eco-development programmes involving local communities and aimed at generating livelihoods for conservation been initiated in the PAs?
- What is the extent and efficacy of government support provided to Conservation Reserves, Community Reserves and Sacred Groves?
- Is the compensation paid to people living in fringe areas for damage to life and property caused by man-animal conflict adequate?

### **Forest management and afforestation efforts**

- Have management plans/ working plans for all the forest areas been prepared by concentrating on basic needs and scientific management focusing on systematic growth of flora and fauna?
- Have annual plans of operation been prepared matching with the operations/ functions of management plans/ working plans and regulated as per the prescriptions?
- Were targets/ goals fixed for the objectives and achieved within a time bound period?
- Was assessment of forest cover and forest depletion made and a time bound plan prepared to bring the remaining portion of the optimum forest area under tree cover especially on all denuded, degraded and unproductive lands?
- Was the remaining natural forest with its variety of flora and fauna which represent the remarkable biological diversity and genetic resources of the country included in

- the forests by rationalizing and re-organizing the boundaries and have been conserved?
- Was the choice of species for plantation in a particular area made as per the traditional natural germination species and by keeping in view the local needs of the right holders/ village communities?
  - Was the management of forest resources done collectively by coordinating with the village communities?
  - Were adequate steps taken for the successful survival of the plantations by making provisions for maintenance and protection from biotic pressures?
  - Were funds provided by foreign agencies to reverse the process of degradation of the natural resource base and to improve the productive potential of natural resources utilized fully within the project implementation period for the purposes for which the funds were provided?
  - Were the existing work processes/treatments of forest operations modified to the extent to make them environment- sensitive?
  - Were plantation models developed so as to meet the needs of the people and the edaphic exactness of species?
  - Were policies that lead to the degradation of forests resources and conversion of forests eco-system to other less valuable uses identified and corrective action taken by modifying such policies?
  - Were steps taken to ensure provision of sufficient fodder, fuel and pasture, specially in areas adjoining forests, in order to prevent depletion of forests beyond the sustainable limit?
  - Did the government plan for afforestation and tree planting programmes, with particular emphasis on fuelwood and fodder development, on all degraded and denuded lands, alongside roads, railway lines, rivers and streams and canals, and on other unutilised lands under State/corporate, institutional or private ownership?
  - Were green belts raised in urban/industrial areas as well as in arid tracts to check erosion and desertification as well as improve the microclimate?
  - Were village and community lands, including those on foreshores and environs of tanks, not required for other productive uses, taken up for the development of tree crops and fodder resources?
  - Did the afforestation programmes emphasise on augmenting fuelwood production to meet the requirement of the rural people since fuelwood continues to be the predominant source of energy in rural areas?
  - Was the concept of Joint Forest Management adopted by patronizing village *panchayats*, NGOs, *Mahila Mandals* and voluntary agencies in afforestation programmes and allocation of plantation targets fixed?
  - Was cultivation and proliferation of medicinal and aromatic plant species made a prominent choice under 'Participatory Forest Management'?
  - Was the expansion of programmes on the use of non conventional energy sources, improved *chullahs*, use of Solar Energy Systems, biogas, and use of LPG and

kerosene oil as a substitute of fuelwood popularized in the villages for the purpose of environmental stability and also to reduce the pressure on forests?

- Was exploitation of natural resources done scientifically so as to protect the environmental stability?
- Was exploitation of such resources which are not renewable stopped?
- Was the tangibility of the benefits commensurate with the investments made for the implementation of afforestation programmes?
- Were wastelands notified as forest land, the control of which is to be vested to Forest department, transferred to it and was its use for any non forestry work been treated as violation of the Forest Conservation Act, 1980?
- Were specific schemes formulated for bringing the area under tree cover and for reclamation of area under cultivable wasteland?
- Was it ensured that schemes and projects which interfere with forests that cover steep slopes, catchments of rivers, lakes, and reservoirs, geologically unstable terrain and such other ecologically sensitive areas were restricted?
- What steps were taken to safeguard the tropical rain/moist forests, particularly in areas like Arunachal Pradesh, Kerala, and Andaman & Nicobar Islands?
- Was any forest area permitted to be worked without the Government having approved the management plan?
- How did the Central Government monitor compliance by the State Governments in this regard and with the National Forest Policy?
- What steps were taken to enhance forest cover and productivity of the forests through the application of scientific and technical inputs in order to meet the growing needs for essential goods and services which the forests provide?
- Were production forestry programmes, while aiming at enhancing the forest cover in the country, and meeting national needs, also oriented to narrowing, by the increasing gap between demand and supply of fuelwood?
- Did any such programme entail clear-felling of adequately stocked natural forests? Were any exotic species introduced, through public or private sources without establishing their suitability through long-term scientific trials undertaken by specialists in ecology, forestry and agriculture to ensure that there was no adverse impact on native vegetation and environment?

### **Diversion of Forest Land**

Forest land is being transferred to development needs and these development interventions has affected the fragile environment to a large extent besides resulting in depletion of forests, increasing pressure on common property resources such as water, air quality, pollution etc. Audit would analyze the approach and strategy measure by examining the following points:

- Was forest land or lands with tree cover being treated merely as a resource readily available to be utilized for various projects instead of treating them as a national asset to be properly safeguarded?

- Was diversion of forest land for non-forest purposes made after thorough and careful scrutiny from the standpoint of social and environmental costs and benefits?
- Was Environmental Impact Assessment (EIA) made for specified developmental activities including industrial projects, thermal power plants, mining activities, river valley hydroelectric schemes and infrastructure projects and were these supported with complete documentation?
- Were all the mandatory formalities/requirements taken from the competent authorities which include site clearance, 'No Objection Certificate' from the State Pollution Control Boards and other local authorities, Environment Management Plans, Rehabilitation Plans, recommendations of the Expert Appraisal Committee forming the basis of Environmental clearance and conditions attached thereto and were there any deviations therefrom?
- After commissioning of the projects, did the concerned project authorities submit the half yearly reports of compliance along with the conditions stipulated in the environmental clearances and were these examined by the MOEF?
- Was action initiated by the concerned State Pollution Control Board against the project authorities who had not complied with the condition of environment clearance?
- Were improved technologies of road construction, mining and other developmental activities utilized in order to protect forests?
- Was it ensured that mining leases were granted only after the party, submitted a proper mine management plan which was properly appraised from the environmental angle?

### **Management and utilization of CAMPA funds**

The rules framed under the Forest Conservation Act, 1980, require that the user agency who is given clearance for the use of forest land for non forest purposes (like mining, large dams and industry) must pay for Compensatory Afforestation (CA) on double the area of forest land and cost for Net Present Value (NPV). The following points would be examined in audit:

- Have the communities displaced due to transfer of forest land been rehabilitated adequately and suitably compensated for their pre-existing rights?
- What steps were taken to ensure that forest land which was originally managed or revered by communities, and other areas comprising the habitat of diverse agricultural and primitive tribal communities was not included in the forest land diverted so as to prevent subsequent agitations by the affected communities? If there was any such case, were the funds deposited under CAMPA remaining unutilized?
- Did the MOEF sanction the diversion of such forest lands which were under cultivation or customary land only after taking into account the objections raised by the villagers?
- Were there cases where forest clearance was given ignoring the objections of the village communities resulting in not permitting the Government or the user agency

- to commence the project work, as a result of which the CAMPA funds remained unutilized?.
- Were the CAMPA funds released for compensatory afforestation, actually spent on raising plantations in the earmarked areas and not diverted for other purposes?
  - Was the cost of compensatory afforestation correctly calculated for the diverted land on the basis of the departmental cost norms fixed for the plantations areas per hectare?
  - Did the costs recovered for the diverted land also includes the costs for maintenance besides the costs for compensatory afforestation?
  - Were the funds released under CAMPA for compensatory plantations utilized within the targeted period and are any funds lying unutilized?

### **Financial planning and support for forestry**

Forests should not be looked upon as a source of revenue. Forests are a renewable natural resource. They are a national asset to be protected and enhanced for the well-being of the people and the nation.

- Was substantial investment of financial and other resources made for forest conservation and afforestation programmes to ensure their effective implantation and monitoring?
- Were adequate funds provided timely to concerned agencies for implementing government programs for protection of forests?
- Did any program suffer on account of lack of funds either in terms of inadequate budget provision, non-release of Central assistance, non-contribution of State's matching share, etc, delayed release leading to lapsing of funds or lack of suitable controls over expenditure monitoring?
- Is there an adequate monitoring mechanism to ensure proper utilization of funds for the purposes for which they were sanctioned?
- Are utilization certificates being submitted by user agencies given timely?
- Is financial and technical support being extended to non-formal conservation initiatives such as Community Conserved Areas (CCAs) and sacred groves which are conserved by the communities as a tradition/ practice or through customary law, to broaden the scope of conservation?
- Is adequate and timely compensation being paid for losses suffered to mitigate wildlife-human conflicts?
- Has the adoption of PPP models been explored to grow trees outside forest areas?
- Is industry being encouraged to be involved in the Social Forestry Movement and to adopt environment friendly technologies?
- Has the possibility of private financing been explored for building green mass outside forests?

### **Forestry and economic considerations**

- Has the government taken steps for mainstreaming forestry into economic sectors and development planning?

- Have flagship schemes like NREGS been finetuned to meet specific forestry objectives?
- Have steps been taken to explore, preserve, conserve and utilize the unique microbial flora of our country for fulfilling the emerging food, fodder and fiber needs, clean environment and improved soil?
- Have efforts been made to tap the traditional knowledge available with the tribal groups and forest-dependent communities and scientifically validate it for making commercially valuable products, so as to make bio-prospecting useful and effective?
- Has the government devised any economic tools and incentives to protect forests? Are cess, user charges and other fiscal instruments being used to confer value on biological resources and for generating revenues to provide financial support for conservation programmes?
- What systems have been developed for greater return of revenues (generated in protected areas, zoological parks, botanical gardens, aquaria etc.) for strengthening forest conservation?
- Have economic development policies, such as increasing tourism in the PAs and biodiversity hotspots, been introduced? How has the challenge of promoting economic activity without compromising the integrity of the natural resources been met?
- Have steps been taken to protect and improve minor forest produce and enhance their production with due regard to generation of employment and income for tribal population and to other communities residing in and around the forests?
- Has the government used natural resource accounting systems in decision-making and resource allocation in the future?
- Does capacity and resource exist to undertake the task of economic evaluation of environmental goods and services emanating from forests and wildlife conservation, particularly the PAs?
- Has sustainable forest management including Joint Forest Management plantation and community/tribal development, contributed to alleviating poverty?
- Has the government taken effective steps to introduce PES system and actively encouraged forest certification?
- Is there a system of assessing inventory including biomass inventory to take full benefit of funding under climate change along with monitoring of biomass inventory and productivity at the regional and national level?
- Do methodologies exist for estimating the carbon pool, and for REDD?
- Has the government stopped the practice of supply of forest produce to industry at concessional prices?
- Are forest-based industries being encouraged to use alternative raw materials?
- Has import of wood and wood products been liberalized?
- Are farmers, particularly small and marginal farmers, being encouraged to grow, on marginal/degraded lands available with them, wood species required for industries?

- Are wood species being grown along with fuel and fodder species on community lands not required for pasture purposes, and by Forest department/corporations on degraded forests, not earmarked for natural regeneration?
- Are forest-based industries providing employment to local people and also involving them in raising trees and raw material?
- Are revenues generated through afforestation programmes shared with the local communities in order to provide an incentive to them?

### **Monitoring, Assessment and Reporting**

- Do monitoring mechanisms exist in the different government agencies dealing with forest conservation? Are these mechanisms adequate and effective?
- Is there any system of regular and sustained monitoring of implementation of government programs for protection and conservation of forests?
- Was outcome evaluation of each program conducted and were lessons learnt and good practices established?
- Were implementing agencies assigned well-defined and clearly measurable targets with established timeframes?
- Was a reporting and accountability mechanism established for the implementing agencies? Was the data furnished by them timely and accurate so as to serve as a useful monitoring tool?
- Did the monitoring and evaluation mechanism helped in effective implementation of the program? Is there a system of peer review of the evaluation reports?
- Is there a formalised monitoring methodology and protocols for the Protected Area network? Is evaluation of Protected Areas in the country being done?
- Is there any system of independent, third party evaluation of implementation of programs through independent experts using international protocols and is the feedback from such independent evaluation used to improve the programs?
- Have national criteria and indicators been developed through multi-stakeholder consultative processes by the Ministry of Environment and Forests, to assess and monitor changes towards sustainability of forests?
- Have criteria and indicators been developed specifically for SFM, sustainable management of plantations, non-timber forest products, mangroves and wetlands?

### **Scientific forestry and research**

With the increasing recognition of the importance of forests for environmental health, energy and employment, emphasis must be laid on scientific forestry research, necessitating adequate strengthening of the research base as well as new priorities for action.

- Is the government promoting and funding research on forestry related issues, including biotechnology?
- Are research programmes aimed at securing biotechnological capacity building of the country for realizing the actual and potential value of biodiversity, along with its conservation?

- Are the research programmes adequately funded?
- Have steps been taken to strengthen existing mechanisms and infrastructure in terms of R&D laboratories and availability of a pool of skilled personnel (scientists, taxonomists, veterinary doctors) etc.?
- Have modern scientific and technological methods been applied to increase the productivity of wood and other forest produce per unit area per unit time?
- Have effective steps been taken for revegetation of barren/marginal/waste/mined lands and watershed areas?
- Have effective steps been taken for conservation and management of existing forest resources (mainly natural forest eco-systems)?
- What is the level and extent of research related to social forestry for rural/ tribal development?
- Have substitutes been developed to replace wood and wood products?
- What is the level and extent of research related to wildlife and management of national parks and sanctuaries?
- Has priority been accorded to complete the survey of forest resources in the country on scientific lines and to update information? Has the process of periodical collection, collation and publication of reliable data on relevant aspects of forest management been improved with recourse to modern technology and equipment?
- Has the government established research institutions in the field of forestry, wildlife and PA management? Have these been provided with enabling governance systems and functional autonomy to fulfill their mandate?
- Are there scientific instruments for Management of Forests i.e. Working Plans & PA Management Plans? Are modern tools and technologies viz. Remote Sensing and GIS, Information Technology, Wildlife Forensics, Satellite Telemetry, Camera Traps, etc. used for assessment and management of natural resources?
- Have collaborative/ sponsored research programmes been arranged with international agencies/organizations such as FAO, UNDP, UNESCO, IUCN and UNEP?
- Has the scope for regional collaboration been established/expanded?
- Have issues of technology transfer been addressed?
- Does the government provide technical assistance and other inputs necessary for initiating forest conservation programmes?

### **Capacity Building**

- Was need assessment for manpower to implement and monitor programs for protection of forests and biodiversity made?
- Were capacity building issues addressed based on the need assessment for manpower?
- Was need –based training provided and proper and planned identification of trainees done with a view to addressing immediate and long-term requirements?
- Are the Government policies in personnel management for professional foresters and forest scientists aimed at enhancing their professional competence and status and designed to attract and retain qualified and motivated personnel, keeping in

view particularly the arduous nature of duties they have to perform, often in remote and inhospitable places?

- Has the government established training institutions in the field of forestry, wildlife and PA management? Have these been provided with enabling governance systems and functional autonomy to fulfill their mandate?
- Has appropriate infrastructure been provided in the training institutes in terms of, properly equipped classrooms and availability of skilled trainers?
- Is there provision of a feedback mechanism on the training programmes? Were appropriate actions taken to address the shortcomings in the training programmes?
- Have capacity building programmes been implemented by national and state-level agencies by setting up their own training institutions or by sponsoring their managers and frontline staff for training in other institutions on forestry and wildlife management?
- Has capacity building been enhanced through identification and training of target groups not only from the forest/wildlife sector but also for policy makers, and defence, customs, and revenue personnel and enforcement agencies, etc.?
- Have specialised and orientation courses for developing better management skills by in-service training been designed, taking into account the latest development in forestry and related disciplines?
- Have collaborative/ sponsored training programmes been arranged with international agencies/organizations such as FAO, UNDP, UNESCO, IUCN and UNEP? Have thematic courses been customised as per the training needs of the country?
- Has the scope for regional collaboration been established/expanded?

### **Public awareness and forestry education**

Forest conservation programmes cannot succeed without the willing support and cooperation of the people. It is essential, therefore, to inculcate in the people, a direct interest in forests, their development and conservation, and to make them conscious of the value of trees, wildlife and nature in general. This can be achieved through the involvement of educational institutions, right from the primary stage. Forestry should be recognised both as a scientific discipline as well as a profession.

- Has the government evolved strategies and programmes to strengthen communication, education and promote public awareness for enhancing the understanding and appreciation of the importance and benefit of forests and wildlife resources?
- Are nature education and other conservation awareness programmes besides celebrating Van Mahotsav, World Forestry Day, Earth Day, World Environment Day etc. being organized?
- Have NGOs been actively associated in this pursuit?
- Has the government used the mass media to spread awareness about the importance and benefits of forests?

- Have mechanisms like short films, documentaries, advertisements, seminars, campaigns, street plays, art competitions, essay writing competitions, etc, been used to raise awareness about biodiversity issues?
- Has government attempted to evaluate the impact of campaigns like the National Environment Awareness Campaign organised by the Ministry of Environment & Forests every year since 1986 with the objective of creating environmental awareness?
- Have farmers and interested people been provided opportunities through institutions like Krishi Vigyan Kendras and, Trainers' Training Centres to learn agri-silvicultural and silvicultural techniques to ensure optimum use of their land and water resources?
- Have short term extension courses and lectures been organised in order to educate farmers?
- Have agriculture universities and institutions, dedicated to the development of forestry education, formulated curricula and courses for imparting academic education and promoting postgraduate research and professional excellence, keeping in view the manpower needs of the country?
- Has 'Environmental education' been introduced' in the school curriculum to impart knowledge about biodiversity and forestry related issues at the school level?
- Have efforts been made to promote eco - tourism with emphasis on regulated and low impact tourism on a sustainable basis through adoption of best practice norms?
- Have steps been taken to disseminate information through electronic as well as other means to interested human rights groups, environment activists and the general public on Supreme Court decisions concerning forest and biodiversity management and conservation?

### **Shifting cultivation**

- Has the practice of shifting cultivation been discouraged by providing alternative avenues of income, suitably harmonised with the right landuse practices?
- Have efforts been made to contain such cultivation within the area already affected, by propagating improved agricultural practices?
- Were areas already damaged by such cultivation rehabilitated through social forestry and energy plantations?

### **Management of Wetlands**

Wetlands are the hub centers of bio-diversity both for flora and fauna, harboring some of the rare species and home to migratory birds and major eco-tourism attractions. Audit would assess the adequacy of measures concerning knowledge, conservation, management and use of wetlands:

- Do the policies formulated comply with the International conventions and national guidelines/ orders on wetlands?
- Is conservation and management of wetlands being done scientifically with focused attention?

- Are steps being taken to increase knowledge and awareness of wetlands management?
- Have ecological and other functions i.e. economic and recreational functions of wetlands been suitably protected?
- Is the conservation, management and use of wetlands as per its designated status for the Natural Habitat and or/ Wild Bird Directives?
- Is the management and control of the wetlands vested only with the Wildlife department and not with any other agency as the Ministry of Environment provides assistance only if the control for its management and development rests with the Wildlife department?

### **Management of mangroves**

- Is mapping of the mangrove cover being done periodically and the results taken into account for deciding policies and strategies on mangrove conservation?
- Have policies been formulated for mangrove conservation? Do these comply with the International conventions and national guidelines/ orders on mangrove conservation?
- Is conservation and management of mangroves being done scientifically with focused attention?
- Are steps being taken to increase knowledge and awareness of mangrove management?
- Have ecological and other functions i.e. economic and recreational functions of mangroves been suitably protected?
- Is the government taking proactive steps to discourage shrimp farming near mangrove plantations?
- Are strict measures being enforced to prohibit hotels and other resorts coming up along the seacoast on the 500 meter buffer along the beach?

### **Countering Desertification**

Deserts and barren land have a direct impact on environment and climate change. To combat desertification, audit would examine the following points:

- Have effective steps/actions at all levels been taken to combat desertification and to mitigate the effects of drought in the regions experiencing serious drought and/or desertification?
- Have forest areas with limited carrying capacities for exploitation of forest resources, pastures and grazing lands upgradation programmes been taken up on priority basis to make up the forest/ grass cover and for rejuvenation of the forest?
- Have adequate steps been taken to control soil erosion through engineering and vegetative measures.
- Have suitable varieties of plants been developed for growing in cold desert areas?

*Separate manuals will be prepared on wildlife management and conservation of biodiversity. However, since both issues are integral to forest management and conservation, some audit checks are given below.*

### **Preservation of wildlife and its habitats**

Forest Management should take special care of the needs of wildlife conservation, and forest management plans should include prescriptions for this purpose. It is especially essential to provide for "corridors" linking the protected areas in order to maintain genetic continuity between artificially separated sub-sections of migrant wildlife. Audit scrutiny in relation to activities for the preservation of wild life and its habitats would extend to the enforcement of the Wildlife (Protection) Act 1972 and implementation and achievements made under various scheme/ programmes. Some of the suggested audit checks areas follows:

- Was the Wildlife (Protection) Act, 1972 enforced and the orders of the Supreme Court/ High Court implemented strictly?
- Was the Protected Areas (PAs) network created keeping in view the ecological status of the area and areas having potentiality for wildlife conservation and propagation not left out from inclusion as PAs?
- Was the rationalization of boundaries of PAs made keeping in view the representative biographic area having species of flora and fauna?
- Were scientific and ecologically sound management plans for all the PAs prepared and taken up for implementation by focusing on scientific growth of PAs and wildlife?
- Were effective and timely steps taken for identification, protection and conservation of all endangered wildlife species and their habitats and was their status reviewed and updated periodically?
- Were adequate steps taken to redress the principal threats to wildlife and their habitats due to development projects, water and air pollution etc.?
- Were projects/schemes sanctioned for the conservation and propagation of wildlife and its habitats including for the endangered species taken up for implementation and completed in a time bound period?
- Was census for all the wildlife species in the PAs carried out periodically to assess the flora and fauna status?
- Was it ensured that illegal/ prohibited activities were not carried out in PAs and these were protected from all biotic pressures and other interferences?
- Were adequate steps taken to protect the wildlife from poaching and illicit trading of animals and their body parts listed in Schedule I to IV of the Wildlife (Protection) Act?
- Was the manpower deployed for the protection work fully trained and equipped with required arms and ammunition?
- Were persons involved in poaching or illicit trade of animals and its body parts booked and punished for such offences?

## Biological Diversity

Bio-diversity is the variability among living organism from all sources including, among others, terrestrial, marine and other aquatic eco-systems and the ecological complexes of which they are a part. This includes diversity within species and between species and diversity of eco-system. Audit would examine the following points:

- Were adequate measures taken for protection of biological resources?
- Were regulation/guidelines made for fair and equitable benefit-sharing and utilization of biological resources?
- Were all areas of bio-diversity have been notified as heritage sites and are being maintained/ managed as heritage sites.
- To check that use of component of biological diversity has been made in sustainable manner at such rate that does not lead to the long term decline of the biology, thereby maintaining its potential to meet the needs and aspirations of present generations.
- To check that there is no conflict in sharing of components of biological diversity due to natural resource degradation as well as societal stratification.
- To check that for flourishing wildlife/ biodiversity within protected areas, land has been identified and notified falling within 10 kilometers of boundaries of PA as eco-fragile zones and the people living in these areas have been sensitized, organized and trained to cope, live and develop in co-existence with wildlife.