Biodiversity—audit guidelines

Audit of biodiversity

Human activities are the main cause of biodiversity loss. Habitat fragmentation, caused by urbanization and agriculture and the overexploitation of resources, leads to depletion of species. Because these activities are regulated by government, Supreme Audit Institutions (SAIs) can play a major role in auditing government's actions. Any audit that touches on ecosystems, watersheds, forests, agricultural practices, marine environments, and other such topics, could be considered an audit of biodiversity. It is an assessment of the nature and extent of harm (or risk of harm) to biodiversity posed by an various human activities or industrial processes.A biodiversity audit must be able to deliver authoritative advice, on which individuals and organisations are able to rely in making decisions which affect the future of our community.

Selecting and determining the scope of audits of biodiversity can be a challenging task. There are so many ways of describing the scope (from genetics to species to ecosystems), the threats (from habitat loss to pollution to urbanization), and the responses of governments (from international conventions to national parks to environmental impact assessments) that even deciding where to start can be difficult.

The approach to an audit of biodiversity would essentially comprise of the following steps:

Step 1. Identify the country's biodiversity and threats to it.

Step 2. Understand the government's responses to these threats and the relevant players.

Step 3. Choose audit topics and priorities.

Step 4. Decide on audit approaches, audit objectives and lines of enquiry.

These steps can be used to define the objectives, scope, and criteria of a single audit of biodiversity or to develop a long-term, risk-based plan for a series of audits. Even though the steps are presented in a linear way, they are, in fact, inter-related. Steps 1 and 2 can be omitted if the audit topic has already been selected.

Like all environmental audits, an audit of biodiversity could examine financial and compliance issues as well as performance issues. *It may be borne in mind that it would not be an audit of biodiversity per se, but rather an attempt to examine the government's role in protecting biodiversity. Further, auditors may also consider environmental aspects while conducting non-environmental audits. Since biodiversity issues can be complex and difficult to understand, the services of experts may be utilized to help the auditor to understand particular issues or to clarify some points.*

Types of audit

a) Compliance audit: With respect to biodiversity, compliance audit would check whether the Government has enacted legislation in pursuance of its internal 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 should be examined to see whether it provides appropriate and sufficient assurance of adherence to statutory legislation.

b) Performance audit: The scope[1] could encompass the following:

- Audit of Government's monitoring of compliance with biodiversity conservation and environmental laws: The main aim of such audit is to assess whether the government is monitoring compliance whether the entities required to follow the applicable acts/rules are doing so or not.
- Audit of the performance of Government's programs to protect biodiversity: The main aim of such audit is to offer an opinion on the performance of specific programs/ projects/strategies to preserve flora and fauna already formulated and being implemented by the Government.
- Audit of the impact of other Government programs on biodiversity conservation: The main aim of such audit is to offer an opinion on the impact of other programs/projects formulated and implemented by other Ministries/ departments/agencies other than the Ministry/Department of Environment. For example, audit of the impact of mining, building roads/dams, on forests and wildlife would fall under this category.
- Audit of Environmental Management Systems: The main aim of such audit is to offer an opinion on the implementation of Environmental Management Systems (EMS) of the audit entity and/or ISO 14001 Standards[2]. The absence of an EMS can also be a source of audit comments.
- Evaluation of biodiversity conservation policies and programs: The main aim of such audit is to offer an opinion on the adequacy or lack of a policy framework governing protection and preservation of biodiversity. International best practices can be a source for such comparison. However, adaptability to local conditions should be considered before making such comparisons.

c) Financial audit: Some audit entities operate in sectors where issues like deforestation may have material impact on their financial statements. In such entities, impact of environment related issues requires to be adequately reported upon in the financial statements. The International Auditing Practices Committee (IPAC) had defined environmental matters in a financial audit and these as applicable to biodiversity preservation are:

- Initiatives to prevent/abate/remedy damage to the environment. Such initiatives may be required by environmental laws and regulations or by contract, or they may be undertaken voluntarily.
- Consequences of violating environmental laws and regulations relating to prevention of habitats, flora and fauna.

[1] As defined by INTOSAI

[2] International Standards Organisation has set specific guidelines for implementing EMS in organizations.

- Consequences of environmental damage done to others or natural resources as a result of operation.
- Consequences of vicarious liability[3] imposed by law. An example could be the present owners being held liable for environmental damage caused by the previous owners by water pollution, deforestation, illegal mining, etc.

Based on these considerations, an audit opinion can be expressed on adequacy of compliance to the various national and adopted international financial regulations.

Audit process

Although every audit project is unique, the audit process is similar for most audit engagements and normally consists of three stages - planning for the audit, conducting field audit and audit reporting. This process is applicable for the audit of biodiversity also.

Audit planning

(a) Audit planning is vital to the success of the audit undertaken. It is essential that the auditors spend adequate time in planning, as this will result in better identification of priority areas and potential problems and proper assignment of work. For conducting successful audit assignments, the auditor needs to know what has to be achieved (audit objectives), determine what procedures to be followed (audit methodology), and assign qualified staff for the conduct of audit (resource allocation).

(b) Gathering background information for biodiversity audit: Some of the sources available for gathering background information about the audit entity are:

- Environmental policy of the audit entity.
- Annual report of the audit entity.
- Identification of the applicable rules relating to conservation of biodiversity.
- Administrative and financial delegation of powers of the audit entity.
- Commitments given by the audit entity to the government planning agencies, in performance/outcome budgets.
- Media reports.
- Reports of independent evaluation agencies like Non Government Agencies (NGOs).
- Peer review reports**.**

(c) Setting audit scope: Audit scope will differ for each different kind of audit. For compliance audit, it will be restricted to checking compliance to applicable acts/rules/laws relating to biodiversity conservation. For performance audit, the scope could be evaluation of government policy/laws/programmes/strategies for conserving biodiversity. The scope of performance audit could also be audit of government's programmes which affect

[3] When one person is liable for the negligent actions of another person, even though the first person was not directly responsible for the damage.

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biodiversity like mining, road-building, power plants etc. Audit scope in performance audit could also encompass audit of Environmental Management System (EMS) which has been put by an agency to reduce negative impacts of its operation. The scope of financial audit in relation to biodiversity could be to examine whether all costs relating to areas such as control of water and air pollution, waste management, peripheral area development, afforestation, etc., have been assessed accurately and disclosed in the financial statements.

(d) Setting audit objectives for environment audits: For compliance audit, audit objectives are derived from the various applicable acts, rules and regulations relating to biodiversity conservation. For performance audits, audit objectives need to be identified at the very beginning and can relate to areas like:

- Existence and adequacy of environment policies / laws /strategies for biodiversity conservation.
- Adequacy of data for assessing the flora and fauna in the country and identifying endangered species.
- Identifications of threats to biodiversity.
- Allocation of responsibility amongst the various stakeholders involved in the conservation of biodiversity.
- Adequacy of monitoring and evaluation of forest and wildlife protection laws.
- Adequacy of infrastructure and funding for biodiversity preservation and genetic research.

For financial audit, audit objectives are derived from the respective applicable financial standards.

(e) Setting audit criteria for environment audits: Audit criteria help in assessing the performance of the entity with reference to certain laid down standards and performance benchmarks.

(i) Compliance audit: The purpose of the criteria for an audit of water pollution is to enable the auditor to establish whether the entity has conducted an activity, which has an impact on biodiversity, in compliance with all applicable obligations defined in the biodiversity protection and conservation laws and rules. Sources of criteria could include:

- National laws – Acts of the legislature and any regulations, rules, orders etc., made under an Act and having the force of law. Those relating to biodiversity are listed in Appendix I.
- International agreements – such as treaties with other jurisdictions and United Nations Conventions like Agenda 21 document of the World Commission on Sustainable Development of the United Nations Conference on Environment and Development, held in Rio in June 1992 and United Nations Environment Programme (UNEP) guidelines.
- Binding standards (including techniques, procedures, and qualitative criteria) issued by environmental monitoring/ regulatory agencies like Animal Welfare Boards, Pollution Control Boards, etc.

- Contracts.

(ii) Performance audit: The purpose of the criteria for performance audit on biodiversity conservation is to enable the auditor to form an opinion on whether the entity has handled and managed to protect the habitat and prevent pollution in an effective, efficient and economical manner consistent with the applicable governmental policy/law/rules. Sources of criteria could include:

- Performance indicators of effectiveness, efficiency or economy that are prescribed by laws/rules on pollution control and prevention, compulsory afforestation, etc specified in the official governmental policy for the activity or otherwise mandatory on the entity.
- Generally accepted standards issued by a recognised body like United Nations Environment Programme, Agenda 21 and other UN agencies.
- Performance indicators or measures used by similar entities or other entities.
- Academic literature on biodiversity conservation.
- Outside experts working in the field of protection of natural heritage.

(iii) Financial audit: The purpose of criteria for the environmental aspects of a financial audit is to enable the auditor to establish whether the reporting entity has appropriately recognised, valued and reported environmental costs, liabilities (including contingent liabilities) and assets. Sources of criteria could include:

- Mandatory standards issued by authoritative standard-setting bodies like IFCAI.
- Standards issued by some other recognised bodies like CPCB/SPCB.
- International standards issued by recognised bodies.
- Guidance issued by relevant professional bodies.
- Academic literature.

Conducting field audit

The purpose of fieldwork is to accumulate sufficient, competent, relevant and useful evidence to reach a conclusion about the performance of the entity with regard to prevention and control of water pollution and to support audit comments and recommendations. Audit evidence is sufficient when it is factual and would convince an informed person to reach the same conclusion. Evidence is competent if it consistently produces the same outcomes. It is relevant when it is directly related to the audit comments, recommendations and conclusions. Conducting field audit consists of the following steps:

- Conducting an opening meeting with the audit entity in order to explain audit objectives, criteria and methodology to be followed by audit.
- Collecting audit evidence through questionnaires, interviews, document scrutiny, photographs, direct testing of samples collected by audit etc.
- Conducting a closing meeting with the audit entity in order to share the preliminary audit findings**.**

Audit reporting

The audit report communicates the results of the audit work and is thus, one of the most important parts of the audit process. If written and communicated well, the report can act as a positive change agent prompting management to take corrective action. The steps taken during post audit are:

- Preparing a draft report after analyzing the audit evidence and drawing audit conclusions against each audit objective.
- Conducting an exit conference with the audit entity to discuss the draft report.
- The audit entity's responses to the draft report.

The final report takes into account the audit entity's responses to audit conclusions and suggests recommendations.

Suggested areas for compliance audit of biodiversity

Compliance audit is a major part of any audit exercise and can form the first step in evaluating whether the acts/rules framed by the government are being adequately complied with. The areas listed below could be checked during compliance audit:

- Monitoring of achievement of targets set for control of pollution, achieving forest cover, regeneration of species, etc.
- Utilization of funds for biodiversity preservation.
- Extent of implementation of obligations under the international accords to which India is a member.
- Contracts, if any, awarded for setting up water/air pollution control infrastructure, waste disposal, conducting survey of habitat/species, etc. In these cases the usual audit checks on contracts may be performed.
- Targets in the inspection of water/air/noise pollution control and prevention measures as per law/rule and whether shortfalls in inspection exist.
- Gaps in requirement of manpower and men in position to implement pollution control measures, enforcement activities like anti-poaching, illegal felling of trees, availability of scientists, taxonomists, etc.
- Regulations for the issuance of licenses for the various establishments, checklist of conditions to be satisfied before issue of these licenses and cases of omissions and lapses in compliance.
- Strategy for the funding of various biodiversity programs, the sources, conditions, sanctions, releases, payments, expenditure, maintenance of accounts etc.
- Role played by the pollution control boards, local bodies, state Governments, Non Governmental Organisations (NGOs) in dealing with biodiversity preservation as defined in the law/act.
- System of imposing punishments for the failures and non-adherence of the rules/ regulations. Imposition, collection, crediting and adequacy of penalties.
- Extent of dues for recovery, efficiency of the system of imposition and recovery of penalty.

- Inspection/checking of established infrastructure for water/air pollution control and prevention, waste generation, facilities established for prevention of pollution.

Suggested areas for performance audit of biodiversity

Objective	Main question	Issues for audit
Theme 1: Assessment of the biological resources of the country and identification of the threats to it		
1. To assess whether the government has assessed the country's biodiversity and the threats to it.	1.1 Has the government assessed the biological resources available in the country?	○ The baseline data on species and genetic diversity, and their macro-and micro-habitats, is inadequate and fragmented in nature as information on the subject is being collated by a number of organizations/agencies. These databases are not upto the standard, primarily because of lack of infrastructure, skilled manpower and coordination among experts in different fields in exchanging data, The different sectoral networks therefore need to establish a nationwide information system with a uniform format for collection, retrieval and dissemination of data. The information collected so far has still to be integrated into a national database. ○ Environmental Information System (ENVIS), set up by the Ministry of Environment and Forests Government of India, is a decentralised information network of distributed subject oriented centres ensuring integration of national efforts in environmental information collection, collation, storage, retrieval and dissemination ○ The documentation of traditional knowledge available in India's ancient texts is being undertaken by Council of Scientific and Industrial Research (CSIR), in the form of a computerized database, called Traditional Knowledge Digital Library (TKDL). People's Biodiversity Registers (PBRs) under the Biological Diversity Act, 2002 is expected to document the un-coded, oral traditional knowledge of local people. Audit would seek to examine the steps initiated by the government in this regard and its progress.

	1.2 Has the government identified the primary threats to each of these resources and its diversity?	The government's efforts to identify specific threats from any of the following factors, or a combination of some of these factors could be examined. • Overexploitation of resources • Habitat loss and fragmentation • Agricultural and aquaculture methods • Invasive alien species • Pollution / nutrient loading • Climate change and global warming • Desertification • Biotechnology • Biopiracy It may also be seen whether government has taken into account studies conducted by other agencies.
	1.3 Has the government assessed the long-term implications of these threats on sustainable economic development?	Audit would seek to examine whether any assessment has been made or studies conducted by the government/any non-government agency and whether the findings have been taken into account while planning for managing and mitigating each of the threats mentioned above.
Theme 2: Government's role in mitigating threats to biodiversity		
2. To assess the government's efforts in mitigating threats to biodiversity	2.1 Has the government signed and ratified any international conventions and treaties for the protection of biodiversity?	Since many environmental issues affect the entire planet, they require the concerted action of national governments. Various bilateral, regional, and international environmental agreements (IEAs) have been signed by national governments to conserve natural heritage. Audit would seek to examine international conventions on biodiversity and the extent of implementation of obligations under the international accords to which India is a signatory such as the Convention of Biological diversity (1993) and The Cartagena Protocol on Biosafety,

	2.2 Has the government enacted legislation and established policies for the protection of all kinds of biodiversity, especially those that are facing threats?	Audit would seek to examine the following: • Has legislation been enacted in pursuance of these international conventions? • Are the legislations/regulations/policies/ programs adequate to address the identified threats? • Are the legislation/policy 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 biodiversity? Have long term and short-term goals been clearly defined? • Have milestones been set and are there clear performance indicators? Although a number of policy, legal and administrative measures are in place to address various aspects of biodiversity conservation [including Wildlife (Protection) Act, 1972, Forest (Conservation) Act, 1980, Biological Diversity Act, 2002, etc.], there is need to promote greater harmony and synergy in these measures. There is a need to identify a mechanism for ensuring legal protection and benefit sharing in intellectual property rights (IPR) related issues in the Indian Himalayan Region and for other plant products.

	2.3 Has the government introduced specific programs for biodiversity, especially those that are threatened?	This would comprise, inter alia, of the following measures: ○ Create protected areas (parks, conservation areas, and bird sanctuaries) such as Gir Sanctuary, Kaziranga Sanctuary, Corbett National Park. ○ Establish and implement recovery plans for endangered species – flagship programmes such as "Project Tiger"," Project Elephant." and Project Rhino and steps taken to protect endangered flora such as and fauna such as camels, alligators, Black Buck and Himalayan flora and captive breeding of selected species. ○ Control and eradicate invasive species ○ Establish land-use planning The planning, funding, execution and outcome evaluation of each of the programs could be studied along with the lessons learnt and good practices established. • The National Action Plan on Climate Change released in June 2008, identifies eight core "national missions" running up to 2017. This includes the National Mission on Sustainable Habitat, National Mission for sustaining the Himalayan Ecosystem and the National Mission for a "Green India." The outcome of these missions could be seen. • Policies and programmes, aimed at securing biotechnological capacity building of the country for realizing the actual and potential value of biodiversity, along with its conservation, also need to be examined.

	2.3 Are the government's programs prepared based on accurate/reliable data and after identification of risks?	Government's prioritization of programmes should be based on the level of threat perception to certain species of wildlife. Planning would also be based on assessment of the requirement/ availability of funds. Audit could examine the basis of selection of certain programmes as 'flagship' programmes.
	2.4 Are the government's efforts to protect and preserve biodiversity comprehensive and broad-based, involving all major stakeholders?	• What is the synergy between Central, state, and local (municipal) governments? • What is the extent of interface between Government owned agencies and enterprises and non-government organizations: civil institutions, professional associations, local communities and scientific institutes? • Is the government promoting voluntary partnerships and PPP schemes for afforestation schemes, pollution control measures, biodiversity conservation, etc?

	2.5 Has the government taken steps for mainstreaming biodiversity into economic sectors and development planning?	• For sustainable agriculture, microorganisms play a decisive role. They have very wide potential for stimulating plant growth, increasing nutrient availability and accelerating decomposition of organic materials, and are anticipated to increase crop production as well as maintain sound environment for sustainable harvests. Hence, it is necessary 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. The biodiversity of freshwater, coastal and marine areas of the country has vast economic potential. • India also has a strong base of indigenous knowledge on various aspects of biodiversity including that of coastal and marine biodiversity. This traditional knowledge has to be scientifically validated through screening of biological diversity for commercially valuable products, so as to make bio-prospecting useful and effective. • The government's implementation of the Planning Commission's recommendations in this regard could be examined. For example, the Tenth Five Year Plan (2002-2007) had set an objective to increase forest and tree cover to 25 per cent by 2007 and 33 per cent by 2012 while the Eleventh Five Year Plan (2007-12) has set a target of increasing forest and tree cover by 5 percentage points. • Natural resource accounting systems are likely to play an important role in decision-making and resource allocation in the future. However, such systems are still evolving and easily usable methods are not yet available.

	2.6 Has the government devised any economic tools and incentives to protect biodiversity?	Cess, user charges and other fiscal instruments are being used to confer value on biological resources. Such tools generate revenue, which could provide much needed financial support for biodiversity conservation programmes. Economic instruments used for environmental tax include pollution charges (emission/affluent tax/pollution taxes), marketable permits, input taxes/product charges, differential tax rates and user administrative charges and subsidies for pollution abatement. The main Market Based Instruments used in India are subsidies for pollution abatement equipment for air and water resources. This provides rebates on duties for various pollution control equipment, monitoring instruments and abatement machinery for air/water pollution and promotion of unleaded fuel/fuel efficient automobile subsidy on automobile pollution kits/converters etc. Accelerated depreciation for pollution control machinery is also provided. Among user charges/administration charges, consent fee is charged from industries under the Water Act and the Air Act. A water cess based on the consumption of water and type of industry (polluting) is also levied on selected industries and urban municipalities to conserve consumption and control pollution of water. The Income Tax Act, 1961 allows deductions towards peripheral development expenses and expenses on research as business expenditure. Audit could evaluate the feasibility and usefulness of these controls and fiscal instruments. • Some states have initiated projects to restore degraded forests and create forest cover for increasing flow of forest produce in a sustainable manner to improve the income level of villagers by promoting sustainable forest management including Joint Forest Management plantation and community/tribal development, with the overall goal of improving environment, conserving biodiversity and alleviating poverty. • Audit could examine the systems developed for greater return of revenues (generated in protected areas, zoological parks, botanical gardens, aquaria etc.) for strengthening biodiversity conservation. • Economic development policy, such as the increasing tourism in the world's biodiversity hotspots, should be examined. In these hotspots, governments face the challenge of promoting economic activity without compromising the integrity of the natural

	2.7 Has the government made it mandatory to get environmental impact assessments conducted for projects to mitigate threats to biodiversity?	In order to harmonize developmental efforts with protection of environment, environmental impact assessment (EIA) was made mandatory through a notification issued in 1994 for notified categories of developmental projects in different sectors of the industry, thermal and nuclear power, mining, river valley and infrastructure projects. To make the EIA process more efficient, decentralized and transparent, a revised notification was issued on September 14, 2006. Project proposals located nearby wildlife sanctuaries, National Parks, and/or biosphere reserves, breeding /spawning /nesting grounds etc. need to come under careful scrutiny, and the EIA report should contain impact on such ecologically fragile/sensitive areas. Further, as India is a signatory to many international agreements therefore global concerns must also be considered. It should be seen whether a project's potential resource consumption, waste generation and emissions could break international codes of practice. Further, the potential trans.- boundary transport of atmospheric pollutants or liquid effluents, potential impacts to wetlands of international importance as per the Ramsar convention and those that attract migratory birds, the use or production of hazardous or toxic materials, potential impacts on primitive and rare cultivated plants and identified rare and endangered species should also be considered. Biodiversity in India is facing threats from various sources of pollution, both point and non-point. New industrial processes are generating a variety of toxic wastes, which cannot be dealt with by currently available technology in the country. Besides, economic constraints and problems related to the indigenization, makes the substitution of these technologies difficult.

	2.8 Has the government made efforts to promote public awareness about biodiversity issues?	The National Environment Awareness Campaign (NEAC) is organised by the Ministry of Environment & Forests every year since 1986 with the objective of creating environmental awareness. Audit could examine whether government has attempted to evaluate the impact of the campaigns. The following aspects may also be seen: • Usage of mass media, audio-visual campaigns, workshops, seminars, etc to raise awareness about biodiversity issues. • Imparting knowledge about biodiversity and related issues at the school level. • Promoting eco - tourism with emphasis on regulated and low impact tourism on a sustainable basis through adoption of best practice norms.
	2.9 Is the government promoting and funding research on biodiversity related issues, including biotechnology?	Research programmes aimed at securing biotechnological capacity building of the country for realizing the actual and potential value of biodiversity, along with its conservation, need to be adequately funded. Existing mechanisms and infrastructure in terms of R&D laboratories, availability of a pool of skilled personnel (scientists, taxonomists, veterinary doctors) etc. need to be strengthened.
Theme 3: Allocation of responsibility and accountability		

3. To assess whether the government allocated responsibility and accountability to agencies for protection of biodiversity.	3.1 Has the government allocated responsibility to any agency for defining environmental policies dealing with the protection of biodiversity?	In Andhra Pradesh , the Environment Protection Training and Research Institute (EPTRI) was set up as an independent registered society in 1992 with the assistance of the Government of Andhra Pradesh and Government of India which also facilitated the bilateral assistance for technical collaboration between EPTRI and Swedish International Development Agency (Sida). It advises the State Pollution Control Boards and respective Governments in fixing environmental standards. It may be seen whether similar arrangements have been set up in other states.

	3.2 Has the government allocated responsibility to any agency for ensuring that environmental laws are being enforced by private and public entities?	The role of the Central and State Pollution Control Boards could be examined in audit. Judicial activism in this regard is also significant and audit could study whether judicial decisions have been suitably enforced. For example, in the wake of the Supreme Court ban on mining activities in Aravalis, the District Administration had appointed sector supervisors for implementing the action plan prepared to check the functioning of mines operating in violation of law. Each supervisor was required to conduct special checking in the areas given to them These supervisors would associate with the officers of police, mining, forest and pollution control board for checking illegal mining. In addition to the sector supervisors, concerned SDM and tehsildar were made overall supervisory officers for their respective jurisdictions, who would ensure implementation of the action plan to check illegal mining activities. Similar steps undertaken by other governments/local administration and the efficacy of such actions could be examined in audit. It may be also examined whether companies are being made to pay for ecological damages caused due to illegal mining in forest area.
	3.3 Has the government allocated responsibility to any agency for preparing environmental standards relating to biodiversity issues?	

	3.4 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 biodiversity?	The role of the Central and State Pollution Control Boards could be examined in audit.
	3.5 Has the government allocated responsibility to any agency for monitoring potential environmental damage and applying penalties when laws are violated?	Pollution Control Boards can levy water cess, fines, etc for non-adherence to pollution control laws. Each State Forest Act and Wildlife Act contains penal provisions to combat measures such as poaching, illicit felling of trees, illegal mining, etc. Offenders indulging in international trading if prohibited species of flora and fauna are subjected to fine, penalty and imprisonment under the Customs Act, 1962. Recently, the Union Cabinet has approved the proposal of the MoEF to enact a legislation to set up a National Green Tribunal. The proposed tribunal will be the sole forum where civil cases relating to the entire gamut of central environmental related laws would be entertained. Failure to comply with the orders of the green tribunal would result in a fine of Rs. 10 crore and three year's imprisonment. The proposed tribunal will ensure a fine balance between judicial activism and executive duties and ensure speedy disposal of cases relating to environmental issues.
Theme 4: Monitoring of government programs for the protection of biodiversity		

4. To ascertain whether the monitoring and evaluation mechanism helped in effective implementation of the program.	4.1 Is there any system of regular and sustained monitoring of implementation of government programs for protection of biodiversity?	The monitoring mechanism in the different Ministries/departments could be studied for its adequacy and effectiveness. Implementing agencies have to be assigned well-defined and clearly measurable targets with established timeframes. The role of the Planning Commission in this regard could also be studied.
	4.2 Is there any system of reporting and accountability?	The existence of a reporting mechanism and timeliness and accuracy of the data furnished could be examined to see it is serves as a useful monitoring tool.
	4.3 Is there any system of independent, third party evaluation of implementation of programs and is feedback from such independent evaluation used to improve the programs?	For example, evaluation studies by independent agencies with technical guidance of The National Land Use & Conservation Board were conducted for work completed under different watershed management programmes. Audit may examine whether the findings of such studies were used for refining the program.
Theme 5: Adequacy of funding and infrastructure, and capacity building		

5. To ascertain whether funding and infrastructure was adequate to ensure effective compliance and monitoring of government programs for enforcing biodiversity.	5.1 Were adequate funds provided timely to concerned agencies for implementing government programs for protection of biodiversity?	Most of the programs suffer from inadequate funding 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. On 10 July 2009, the Supreme Court ordered that the Rs.11,000 crore lying unutilized in the Compulsory Afforestation and Fund Management and Planning Authority (CAMPA) fund since 2002 be released in tranches of Rs. 1000 crore every year to the states on pro rata basis. The states will utilize the money for compensatory afforestation and catchment area treatment plan. The Supreme Court also directed that the works undertaken with this fund would employ villagers under the NREGA model. This is a huge disbursement as the cumulative budgeted allocation for forest and environment by all states for 2009-10 is around Rs. 800 crore.
	5.2 Whether need assessment for manpower to implement and monitor programs for protection of biodiversity was made and was the manpower deployed effectively?	Audit may examine whether the entities have adequate and appropriate resources at their disposal to carry out their assigned responsibilities. The requirement vis-à-vis the adequacy of trained /skilled manpower may be seen. Provision of infrastructure such as vehicles, communication facilities like hand held radios and arms and ammunition to personnel engaged in preventive activities may be seen. The age-mix of those deployed in field duties may be examined against established norms.

	5.3 Were capacity building issues addressed based on the need assessment for manpower?	Provision of infrastructure in terms of training institutes, properly equipped classrooms and availability of skilled trainers may be examined. Provision of need –based training and proper and planned identification of trainees with a view to addressing immediate and long-term requirements may be seen. Provision of a feedback mechanism and actions to address the shortcomings in the training programs may be examined,

The following checklist is suggested for conducting a performance audit on biodiversity. In addition, any of the themes listed in the checklist below can also be selected for a performance audit.

Possible areas for examination in audit of biodiversity across different sectors/departments

Environment protection is enshrined in the Constitution of India. Article 48-A and Article 51-A(g) of the Directive Principles of State Policy in the Constitution of India state that "the State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife in the country ", and it is a duty of every citizen "to protect and improve the national environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures ". Under the system of democratic decentralization of responsibilities, local bodies consisting of elected representatives, one third of whom are women, have been entrusted with the responsibility of safeguarding the local environmental capital stocks.

National, state, provincial and local (municipal) governments, Government owned agencies and enterprises, and non-government organizations such as civil institutions, professional associations, local communities, scientific institutes, universities and other academic institutions, autonomous bodies, women's organizations and NGOs are all key players in the efforts to conserve and maintain biodiversity.

Biodiversity being a multi-disciplinary subject, several Ministries/Departments and affiliated agencies at the central and state levels have been entrusted with the responsibility of undertaking biodiversity related programmes. At the Central Government level, the Ministry of Environment and Forest (MoEF) is the focal point for biodiversity conservation, as well as the nodal Ministry for all environment and forest related matters. Besides, the Ministries/Departments of Agriculture, Health, Water Resources, Rural Development, Power, Mining, Industry, New and Renewable Energy, Urban Development, Land Resources, Animal Husbandry, Dairying and Fisheries, Biotechnology and Science and Technology have also framed various programmes for conserving and protecting our natural heritage. In addition, the: Ministry of Earth Sciences, Food Processing Industries, Petroleum & Natural Gas, Panchayati Raj, Tourism, Tribal Affairs and the Department of

Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) also have important programmes relating to biodiversity.
Likewise, at the State Government level, the nodal Department charged with the responsibility of conserving the natural heritage is the Department of Forest and Environment, with other Departments such as Water Resources, Mining, Agriculture, Fisheries and Energy also playing supporting roles.

Besides, professional associations and scientific institutes such as Animal Welfare Board of India Botanical Survey of India, Centre for Cellular & Molecular Biology, Centre for DNA Fingerprinting and Diagnostics, Central Drug Research Institute, Consultative Group on International Agricultural Research, Central Pollution Control Board, Council of Scientific and Industrial Research, Central Zoo Authority, Indian Council of Agricultural Research, Indian Council of Forest Research and Education, Indian Council of Medical Research, Indira Gandhi National Forest Academy, Indian Institute of Forest Management, National Bank for Agriculture and Rural Development, National Agricultural Cooperative Marketing Federation of India, National Biodiversity Authority, National Botanical Research Institute, National Environmental Engineering Research Institute, National Innovation Foundation, National Institute of Oceanography, National Institute of Science Communication and Information Resources, National River Conservation Directorate, and the Institute of Forest Genetics and Tree Breeding, The Centre for Environment Education (CEE), CPR Environment Education Centre, Wildlife Institute of India, National Research Centre on Deoxyribonucleic Acid, Fingerprinting and Plant Varieties Protection, and Farmers Rights Authority also play an important role in the protection of biodiversity. In the states, the *State Animal Husbandry Departments, State Agricultural Universities, State Pollution Control Boards and the State Biodiversity Boards are major players in this area.*

The Central and State governments have also entered into voluntary partnerships with various non-governmental organizations. Various programmes initiated by the MoEF including NAP, setting up of Joint Forest Management Councils and Hill Area Development Programme focus on greater participation of the communities with the objective of improving their livelihoods. These programmes also help in poverty alleviation in the respective areas. The involvement of the private sector is encouraged in activities for the sustainable use of biodiversity. For example, both public and private sectors – comprising individuals, companies, cooperatives, and industry – are playing key roles in the management of forests. The private sector has also demonstrated its ability to enhance the productivity of wastelands and is dominant in the areas of wood harvesting and processing. Biodiversity management programmes are also implemented by other ministries like Ministry of Rural Development (MoRD) and Ministry of Water Resources (MoWR). Some of these are:

- Integrated Watershed Development Programme (IWDP) under MoRD
- Drought Prone Areas programme (DPAP) under MoRD
- Desert Development Programme (DDP) under MoRD
- Flood Management Programme (FMP) under MoWR

- Command Area Development & Water Management Programme (CADWM) under MoWR.

There is also a growing recognition that several programmes and schemes undertaken by various Government Ministries and departments have overlapping objectives and hence there is a need for synergy of efforts. The National Rural Employment Guarantee Act, 2005 entitles a rural household for 100 days of work in a financial year. Many of the works permissible relate to forestry, like afforestation and, tree plantation, water conservation and water harvesting, etc. The recently published guidelines for convergence of water conservation and irrigation works to be taken up under NREGA (implemented by MoRD) and the programmes of MoWR are meant to optimize synergies between NREGA and MoWR as more than 50% of NREGA projects are related to water conservation/management. Convergence between NREGA and Programmes of MoWR is mutually beneficial. There is a gap between the irrigation potential created and that utilised. Many of the irrigation projects in the country have also been under operation below their potential due to inadequate maintenance, which is one of the important factor for reduced irrigation efficiency at project level. This has resulted in the problem of low efficiency of water usage and low productivity. Increasing trend of water logging, salinity and alkalinity is offsetting the advantages of irrigation by rendering the affected areas unproductive or under-productive. The process of reclamation is far exceeded by an additional area becoming water logged and saline/alkaline.

There are a number of Ministries/Departments, agencies, and organizations which are supporting research relating to biodiversity. Coordination among these organizations needs to be enhanced. There is also a need to effectively integrate findings of research projects into policy-making and implementation of programmes.