Case Study: Water Pollution in India

Objectives of the case study

A form of qualitative descriptive research, **case study** refers to the collection and presentation of detailed information about an event or a process. The purpose of a case study is not to focus on the discovery of a universal, generalizable truth, nor does it typically look for cause-effect relationships; instead, emphasis is placed on exploration, description and the learning from the event or process.

The purpose of this case study is to demonstrate by means of an example taken from an actual audit-**"Water Pollution in India",** how an environment audit using the Performance Audit approach was conceptualised, planned and carried out. In particular, it aims to:

- Illustrate the steps to be taken to conduct an environment audit.
- Place the methodology adopted for this audit within the International Standards of Supreme Audit Institutions (ISSAIs) relevant to environment audit
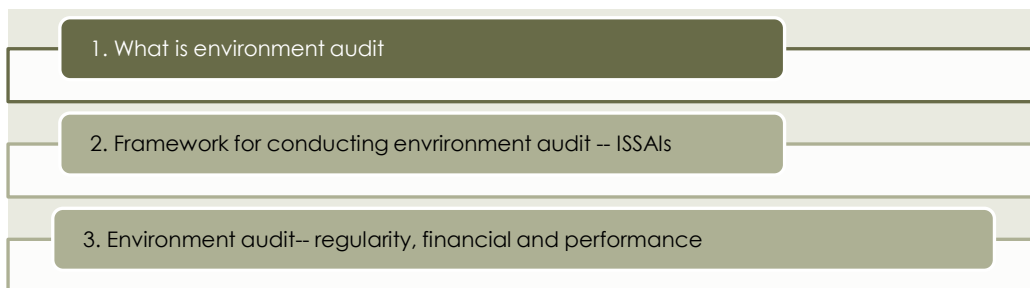
The ultimate aim of this case study is to help auditors plan and carry out an environment audit. We hope that this case study is a useful tool for trainers for audits in the field of environment and sustainable development. The case study is targeted for audit practitioners with basic knowledge and experience in auditing.

This case study is divided into 6 sessions, each with specific learning objectives. An attempt has been made to fit the relevant aspects of the audit (Water pollution in India) with the learning objectives. Each session ends with an illustrative list of questions which can be used in a class room as an individual/group activity to re-visit concepts discussed in the preceding section. The questions are framed to encourage the trainees to supplement class room learning with individual research.

Session 1:

Environment Audit

Learning Objectives

1. What is environment audit

2. Framework for conducting envrironment audit -- ISSAIs

3. Environment audit-- regularity, financial and performance

1.   Over the past 20 years national as well as international awareness of environmental issues has grown rapidly – with particular emphasis on matters such as ozone depletion, the destruction of rain forests, climate change and global warming. The greatly increased

knowledge and experience gained in environmental issues during this period have led to a rethink on the role and responsibility of both government (at national and local level and their associated agencies) and industries. Some of the crucial changes are the expansion of environmental regulation, the increasing cost of environmental protection leading to search for cost-effective compliance to the regulations. The United Nations Conference on the Environment in Rio de Janiero has raised awareness on the issues of environment and sustainable development. It also affirmed the accountability of the government agencies/ corporate sector and the need for reporting on environmental consequence of decisions and actions. It is in this context that Supreme Audit Institutions (SAIs) all over the world are undertaking environment audits.

The term "environmental auditing" is used in the context of the independent   external audit. SAIs agree[1] that environmental auditing is, in principle, not very different from the audit approach as practised by SAIs, and it could encompass all types of audit-compliance, financial as well as performance audits. For SAIs, audit attention may be devoted to, for example, the disclosure of environmental assets and liabilities, compliance with legislation and conventions—both national and international—as well as to measures instituted by the audited entity to promote economy, efficiency and effectiveness.

2.   Four ISSAIs are relevant to practice and conduct of environment audit: **ISSAI 5110**: Guidance on Conducting Audit Activities with an Environmental Perspective; **ISSAI 5120**: Environmental Audit and Regularity Auditing; **ISSAI 5130**: Sustainable Development: The Role of Supreme Audit Institutions; and **ISSAI 5140**: How SAIs may co-operate on the audit of international environmental accords.

ISSAI 5110: Guidance on Conducting Audit Activities with an Environmental Perspective (2001) seeks to provide SAIs with a basis for understanding the nature of environmental auditing as it has so far developed in the governmental sphere. This basis is intended to provide a starting point from which each SAI can create its own approach to the satisfactory discharge of environmental auditing responsibilities within the context of each SAI's jurisdiction and mandate.

ISSAI 5120: Environmental Audit and Regularity Auditing (2004) provides guidance to SAIs on how to conduct environmental audits by applying regularity (financial and compliance) auditing practices. It demonstrates that SAIs do not necessarily require a performance audit mandate to conduct audit work with an environmental focus.

ISSAI 5130: Sustainable Development: The Role of Supreme Audit Institutions (2004) offers an overview of the concept of sustainable development and includes practical guidance to SAIs on how to integrate sustainable development into their audit work.

ISSAI 5140: How SAIs may co-operate on the audit of international environmental accords (1998) defines, among other issues, the approach by which such audits may be carried out i.e., joint, concurrent or coordinates; the advantages/disadvantages of each approach;

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[1] At XV INCOSAI conference in Cairo

nature and methodology of each approach; describe a protocol or agreement for SAIs to use when carrying out and reporting such audits.

3.   ISSAI 5110 provides an overarching framework to SAIs for conducting audits with an environmental perspective. **Paragraph 124** affirms that "the full scope of government auditing – regularity (financial and compliance) and performance – also applies to environmental auditing."

The full spectrum of audit activities currently practised by SAI India is available to conduct environment audit in India.

4.   **Suggested exercises**

*   Outline some of the key issues of sustainable development that challenge India today.

*   Link these challenges with the legislation and policies of the government to combat them.

Session 2:

Strategic planning

Learning objectives

ISSAIs relevant to strategic planning

Steps in selection of topic

Deciding audit methodology to adopt (compliance, financial or perforamce)

1. Identifying the sustainable development issues germane to the country is the first step to strategy planning for environment audits. The relevant ISSAI 5130: Sustainable Development: The Role of Supreme Audit Institutions states **(paragraph 1.8)** that "a broad interpretation of sustainable development is likely to encompass a very wide range of issues; the figure below illustrates the potential scope of this concept."
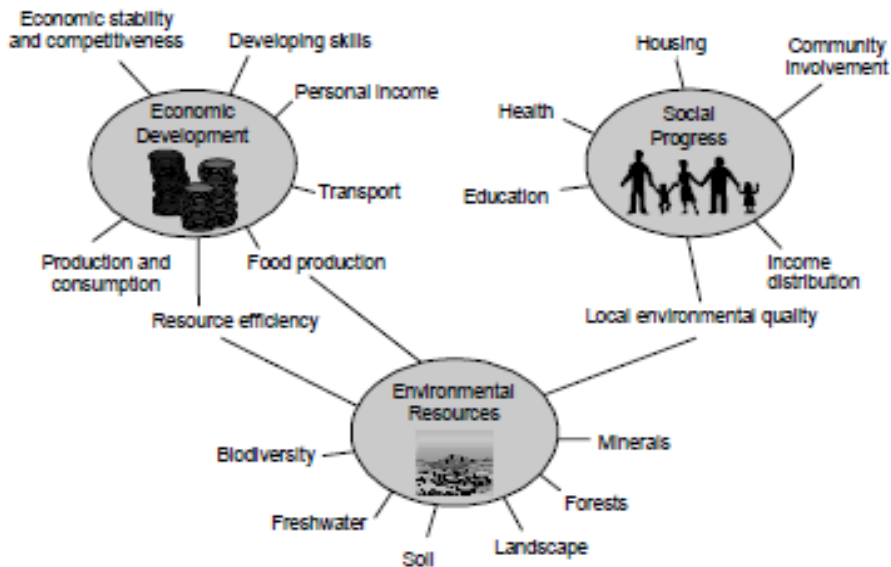
Paragraph 1.9 of ISSAI 5130 states that "Governments have a key role in promoting sustainable development. They are responsible for setting the direction, making policy and providing co-ordination. They represent the nation's interests in international negotiations that affect development and the environment. They enter into commitments, for example to prepare national programs to contain greenhouse gas emissions or to promote

sustainable development. They develop strategies for putting these commitments into action."

Paragraph 1.14 of ISSAI 5130 states that "the wide scope of sustainable development, and the strategies and policies that flow from it, provide plenty of scope for audit. Some SAIs have a specific mandate in respect of sustainable development or the environment. Some will have mandates that are confined to financial or compliance audits, while others will extend to performance audit or comprehensive audit. Some mandates will be entirely retrospective while others require or permit pre- audit or audit of the budget. Some will be limited to national government; yet others will extend to regional and local government and to state-owned enterprises."

Awareness of sustainable development issues is important as they provide a framework for planning audits with environmental perspective. It is important to be aware of sustainable development policies of the government.

2. Selection of topic for audit is usually the result of strategic planning which results in a databank of topics/issues to be audited in the next few years. According to *INTOSAI's Performance auditing Guidelines*, strategic planning is the basis for the selection of audit topics.

ISSAI 5130 states in **paragraph 3.7** "The selection of audits to undertake will depend on the approach adopted by the SAI to choose its wider program of audit. In most instances, audits focused on sustainable development will have to compete with ideas on other topics for a place in the SAI's program and priorities. *The study topic will therefore need to be auditable, offer added value, tackle material issues and be capable of timely completion within the available resources.* **Paragraph 3.8** further states that "*The topic's importance is likely to reflect not only monetary value, but also the importance of the program's impact*".

3. A risk assessment with sustainability as the focus, informs the selection of topics by a SAI. The inputs from key stakeholders and in particular with the audit Advisory Board, supports this exercise.

Audit of Water pollution in India: Selection of Topic

The Office of the Comptroller and Auditor General of India in conjunction with office of Principal Director of Audit, Scientific Departments organised a Stakeholders' Conference on Environment Audit, to flag major environmental issues in India and to identify significant areas for audit enquiry in the future. Experts from Civil Society organisations, from Ministries of Environment & Forests and Urban Development, from the Indian Meteorology Department and representatives/corporate bodies working in the field of environment attended the Conference. Some issues discussed during the Conference were that audit should look at issues of ecological sustainability, equity in distribution of environmental resources and efficiency of environmental programmes, the timing of audit: planning audits during the process of implementation of the programmes so that inputs can be provided to improve performance, the need to evolve standards for involvement of

public/public participation in agencies, etc. The participants also felt that water was one of the most vital concerns plaguing India currently, specially the pollution being caused to our rivers and lakes and that water, being an important environment issue, should be audited by SAI India.

4.   Environment audit: deciding the kind of audit

Paragraph 124 of ISSAI 5110 states that "the full scope of government auditing – regularity (financial and compliance) and performance – also applies to environmental auditing." Key guidance with regard to each kind of audit comes from the following paragraphs: **Paragraph 125**: "during an *audit of financial statements*, environmental issues may include initiatives to prevent, abate or remedy damage to the environment, the conservation of renewable and non-renewable resources, consequences of violating environmental laws and regulations, consequences of vicarious liability imposed by the state."

Paragraph 126 "*compliance auditing* with regard to environmental issues may relate to providing assurance that governmental activities are conducted in accordance with relevant environmental laws, standards and policies, both at national and (where relevant) international levels."

With regard to *performance audit*, ISSAI 5110 guides as below:

Paragraph 127: "performance auditing of environmental activities may include ensuring that indicators of environment-related performance (where contained in public accountability reports) fairly reflect the performance of the audited entity, ensuring that environmental programmes are conducted in an economical, efficient and effective manner."

Paragraph 209: "performance audit, in the context of an audited entity's performance in carrying out Government environmental programmes and activities, may where applicable, be concerned with: the economy of administrative practices; the efficiency of utilisation of human, financial and other resources employed on the programme or activity; and the effectiveness of the programme or activity in achieving its objectives and its intended impact."

Paragraph 210:" performance audit with an environmental focus can often be classified as one of five specific types: audits of Government monitoring of compliance with environmental laws; audits of the performance of Government environmental programmes; audits of the environmental impact of other Government programmes; audits of environmental management systems; and evaluations of proposed environmental policies and programmes".

Thus environment audit can use any of the 3 types of audit: financial, compliance or performance, for the selected audit topic.

Audit of Water pollution in India: Nature of Audit

Our goal was to go beyond audit of financial issues. Hence, financial audit was not considered the appropriate choice. Compliance methodology would also not be appropriate; non-compliance to regulations had already been pointed out in the public domain through media reports, academic discussions etc. The Compliance audit approach would not have led to conclusions regarding the extent of pollution, impact of pollution and effectiveness of water pollution measures taken by the government. The stakeholders participating in the conference also stressed that the audit should go beyond compliance and review the impact of governmental action.

We chose the Performance audit approach as it would not only encompass elements of compliance, but would also allow us to comment on effectiveness issues. We felt that incorporation of the 3 E's (Economy, Efficiency and Effectiveness)in our audit approach would lead to audit results that were more relevant, topical as well as lead to definite audit conclusions regarding impact assessment. The Performance Audit approach would help us to frame valid and useful recommendations towards augmenting governmental efforts on this very important environment issue.

5. Suggested exercises

- Identify 2 sustainable development policies of the government and use them to derive probable audit topics.

- Identify financial issues in any audit topic on environment issues, say Protection of Elephants in India.

- Identify compliance issues in any audit topic of environment issues, say, Protection of forests in India.

- Give 3 examples each for each of the 5 kinds of PA identified by INTOSAI from the Indian environment scenario

- Suppose have selected a topic for environment audit called Management of Biomedical Waste in Rajasthan. Give examples of the kind of issues that would be examined with respect to this topic if you were doing a financial audit, a compliance audit and a performance audit.

Session 3:

Planning the audit

Learning objectives

1. Learning aboiut relevant ISSAIs

2. Steps in planning the audit
  - defining audit scope
  - identifying audit objectives, sub-objectives and study design matrix
  - defining audit criteria
  - Audit sampling
  - identifying staff and resources needed for the audit

1. Planning the audit is the most critical step in the successful conduct of any audit; good planning is almost half the job done.

Auditing Standards of INTOSAI (AS 3.1.1) as well as **Paragraph 141** of ISSAI 5110 states that "the auditor should plan the audit in a manner which ensures that an audit of high quality is carried out in an economic, efficient and effective way and in a timely manner." A well thought-out plan is in general indispensable to a good audit.

In our audit on **Water pollution in India**, we spent close to 6 months planning the audit. Various steps which we undertook as a part of the planning process are explained below.

1.1 Collection of background material

Paragraph 142 of ISSAI 5110 states that "the auditor should collect information about the audited entity. This should, where applicable, also include relevant environmental information such as legal mandate of the entity, entity's approach to environment issues, laws and regulations governing the entity's environmental responsibilities or its role in determining those of others etc."

Audit of Water pollution in India: Data collection

In a comprehensive data collection exercise, we followed a hierarchical approach, with the sources spanning documents in the public domain, of government of India and other reports- national and international. Specifically, we collected information in the following hierarchy:

- what is water pollution

- water pollution in India

- water quality criteria in India

- effects of water pollution on human health, on food production and on biodiversity

- sources of water pollution

- institutional arrangements for managing water pollution in India: governmental policies, acts and legislations

- guidelines on the various programmes of Government of India and state governments for control of water pollution: with specific regard to implementing agencies, funding and monitoring mechanisms

- role of different bodies in the control of pollution in India

- reports about water pollution from across the world *(list of Reports is given in Annex 1)*

We also richly benefitted from our meetings with people working in the field like Civil Society organisations, monitoring agencies, regulatory agencies and implementing agencies. This is an important part of planning and a good practice that must be followed in all audits. In particular in environment audits to gather differing narratives on issues that currently appear intractable. Discussions with a wide cross section at this stage help to nuance the report; it also aids better appreciation of the audit report when it is made public.

1.2 Defining audit scope

The scope is the boundary of audit. Scope narrows down the audit to significant issues that relate to the audit objectives. It determines the extent of examination of the identified key areas. **Paragraph 143** of ISSAI 5110 re-iterates it: "the objective and scope of the environmental audit should be clearly defined."

Audit on Water Pollution in India: Scoping

The scoping was informed by the discussions in the Stakeholders' conference on environment audit as well as the results of deliberations during the International Conference on Water pollution. While putting the ordinary citizen in the centre of our study and thus identify the issues most relevant to the citizens in the audit, we placed an advertisement in the major newspapers in India, inviting the

> The Comptroller and Auditor General of India will be conducting a Performance Audit on the subject *"Pollution of ground water, lakes and rivers in India"* during 2010-11. In case you want to draw attention to any specific problem/issue regarding water pollution which is affecting you or the environment around you, please get in touch with us. We would try to address these important issues in our report.
>
> **Email:** cag.water@gmail.com
> **Postal address:** Office of the Principal Director of Audit, Scientific Departments, DGACR Building, IP Estate, New Delhi 110002.
>
> Fax No: 011-23702353

general public to post/e-mail their comments to us. A copy of the advertisement is placed alongside.

We also created an e-mail account to facilitate communication on this issue. More than 5000 comments, on e-mail, post, and fax were received and which gave us lots of inputs to scope the topic as well in helping us decide audit objectives and audit questions.

Finally, the audit was scoped to answer the question whether rivers, lakes and ground water in India were polluted, if so, the reasons and the impact of such pollution on environment and ecosystems. We were aware that this scope was vast; it was a considered decision because only such a vast scope could a broad overview of all water quality issues existing in India as well as would allow us to reach definite conclusions on the big audit question. It was also envisaged that since the scope of the report was very large, it would take almost one and a half years for completion, substantially longer than normal performance audits. The expectations from the report, sometimes competing amongst each other: the topicality, relevance, importance of the topic, cost of audit, firm conclusions & overarching approach, challenges in aggregating data from diverse locations in the country and audited by different audit teams spread across the country etc., informed the decisions on the scope of the audit.

25 states were selected (3 North Eastern states, Arunachal Pradesh, Meghalaya and Manipur) were excluded from audit scope due to constraints related to manpower. Some states like Assam, Chhattisgarh, Himachal Pradesh, were included in the sample even though no water pollution prevention projects were being implemented in the state to allow us to reach conclusions on issues like policy, planning, monitoring issues etc.

It is relevant to mention here that the Indian Constitution provides for a federal structure, with responsibilities being divided between the central government and the state government as well as certain overlapping functions which are concurrent in nature. Water is a state subject and the role of the central government extends only to making policies and programmes while the actual implementation resets with the state governments. At the Central level, we conducted the audit of Ministry of Environment and Forests (MoEF), Ministry of Water Resources (MoWR), Water Quality Assessment Authority (WQAA), Central Pollution Control Board (CPCB), Central Ground Water Board (CGWB). At the state level, the units audited were departments of environment, project implementing agencies like municipalities, lake development authorities, urban development agencies, monitoring agencies like State Pollution Control Board etc.

The entire report took one and a half years i.e., from February 2009 to July 2010. Thus, performance of the central and state governments in the area of control on water pollution, in the last 5 years, was covered in our audit.

1.3 Identifying audit objectives, sub-objectives and study design matrix

Once audit is scoped, it is an easier task to identify the audit objectives. Identification of audit objectives directs the audit work and helps to link audit methodologies and findings to the conclusions. Setting audit objectives precludes the perception of prejudged

outcomes; fosters discipline and precision; facilitates clarity; helps focused data gathering activities; helps establish underlying logic; accomplishes intended results; demonstrates consistent quality of audit; and serves as a measure of quality assurance of performance audit.

Audit on Water pollution: Audit objectives

Our audit objectives were to assess whether:

1. The overall status and the quality of water in rivers, lakes and groundwater have been adequately assessed in India;

2. Risks of polluted water to health of living organisms and the impact on environment have been adequately assessed and these risks effectively disseminated to the impacted target groups;

3. Adequate policies, legislations and programmes have been formulated and effective institutions been put into place for pollution prevention, treatment and restoration of polluted water in rivers, lakes and ground water;

4. Programmes for pollution prevention, treatment and restoration of polluted water in rivers, lakes and ground water have been planned, implemented and monitored efficiently and effectively;

5. Funds were utilised in an efficient and economic manner to further the aim of reduction of water pollution;

6. Have adequate mechanisms been put in place by the government to sustain measures to tackle water pollution; and

7. Programmes for the control of pollution had succeeded in reducing pollution levels in ground water and surface water and restoring water quality

Against each audit objective, we framed the issue analysis which broke down the audit objectives into sub-objectives and further into audit questions, which could only be answered as "Yes" or "No". An example is as follows:

Audit objective	Sub-objectives	Audit questions
1. Have adequate mechanisms been put in place by the government to sustain measures to tackle water pollution?	1. Is reliable and verifiable data being collected to track surface water and ground water pollution?	1. Have water monitoring stations established for each river and lake in India by MoEF?
		2. Are all water quality monitoring stations either classified by MoEF as baseline, trend or flux stations?
		3. Is the frequency of sampling of baseline stations by MoEF at least once a year?
		4. Is the frequency of sampling of trend stations by MoEF at least four times every year?
	2. Have increased monitoring and data collection mechanisms to	1. Have watershed indicators been developed by MoEF for the major watersheds in India?

track pollution in surface water and ground water been put in place to evaluate effectiveness?		
		2. Have biological indicators been identified for each river and lake by MoEF?
		3. Have chemical and biological indicators defined by MoEF/MoWR for ground water?
		4. Whether Index of Biotic Integrity (IBI)[2] been developed by the states/MoEF for all the rivers/lakes in India?
		5. Whether Ground water quality indicators have been developed for ground water in India?

Paragraph 211 of ISSAI 5110 states that "Standardised Questionnaire: A questionnaire that is carefully prepared, tested, and applied consistently may be useful if a large number of entities must be contacted. Where lower-level governmental entities are given delegated environmental regulatory responsibilities, the SAI may develop a questionnaire to ascertain their progress in implementing a given activity; the problems that may be impeding their efforts; and recommended actions that would help to improve their performance."

Audit on Water pollution: Audit Study Design matrix and questionnaires

The study design matrix was used to prepare an audit questionnaire to be used during the field audit visit. An example is attached as *Annex2*. Different audit questionnaires were designed for state environment departments regarding planning and data adequacy issues; state implementing agencies regarding actual implementation of the programmes and for monitoring agencies.

1.4   Defining audit criteria

Audit criteria are reasonable and attainable standards of performance against which economy, efficiency and effectiveness of programmes and activities can be assessed. They reflect a normative (i.e., desirable) control model for the subject matter under audit. They represent good practice - a reasonable and informed person's expectation of 'what should be'. When criteria are compared with what actually exists (what is) audit findings are generated. Meeting or exceeding the criteria might indicate the 'best practice', but failing to meet the criteria would suggest that improvements could be made.

The relevant paragraphs of ISSAI 5110, relating to audit criteria are:

Paragraph 301: "a key concern for SAIs in carrying out environmental audits is determining the technical criteria against which the audited entities' disclosures or performance will be assessed. A SAI faces significant risk if it uses criteria which are wrong or considered to be biased. It therefore needs to take care to ensure that the chosen criteria will be generally accepted as relevant, complete, and understandable."

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[2] IBI is a synthesis of diverse biological information which numerically depicts associations between human influence and biological attributes. It is composed of several biological attributes or 'metrics' that are sensitive to changes in biological integrity caused by human activities.

Paragraph 306: "the purpose and sources of the criteria are determined by the type of audit and, hence, the broad audit objective. So far as authoritative[3] sources of criteria are available they should be used in preference to non-authoritative[4] sources."

Paragraph 309: "a financial or performance audit may need to be based on criteria from both authoritative and non-authoritative sources."

Paragraph 318: Criteria for PAs :" The purpose of the criteria for an environmental performance audit is to enable the auditor to form an opinion on either or both of: (i)the validity of the performance indicators used by the entity when publicly reporting its performance in conducting the environmental activity or;(ii) whether the entity has conducted the environmental activity in an effective, efficient, and economical manner consistent with the applicable governmental policy; and any other factors affecting the conduct of the activity over which the entity had no control."

Paragraph 319 further states that "in what is still a developing field of management and audit, authoritative sources of criteria may be few or non-existent. Possible sources could include: Performance indicators of effectiveness, efficiency or economy that are prescribed by law or specified in the official governmental policy for the activity or otherwise mandatory on the entity; generally accepted standards issued by a recognised body; codes of professional practice issued by a recognised body."

Paragraph 320 and **321**: "as with a financial audit, subject to an assessment of the risk, a non-authoritative source of criteria can be any source that the auditor considers appropriate for the purpose. Such a source could include performance indicators or measures used by similar entities or other entities engaged in similar activities; academic literature; outside experts; the SAI itself.

Audit on Water pollution in India: Audit criteria

We used a mix of authoritative and non-authoritative sources of criteria. Authoritative sources included guidelines for implementation and monitoring of National River Conservation Plan and National Lake Conservation Plan; The Water (Prevention and Control of Pollution) Act, 1974; National Environment Policy 2006; National Water Policy, 2002; Implementation guidelines for Integrated Water Resources Management, specifically Integrated River Basin Management and Integrated Lake Basin Management etc. Non-authoritative sources included 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, Guidelines of United Nations Environment Programme (UNEP) on water pollution etc. These non-authoritative sources for criteria were used since they were missing in national policy, legislations, acts, monitoring regulations etc. An example would be the absence of standards on non-point sources of pollution of rivers and lakes.

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[3] An authoritative source of criteria is one which falls within the meaning of "generally accepted accounting practice" (or its equivalent term) in the jurisdiction in which the entity is reporting.

[4] Subject to an assessment of the risk, a non-authoritative source of criteria can be any source that the auditor considers appropriate for the purpose.

1.5   Audit Sampling

Paragraph 211 of ISSAI 5110 states "In certain instances, the SAI may need to examine environmental issues concerning hundreds, or even thousands, of entities such as toxic waste sites, chemical storage facilities, and drinking water supply systems. The necessary information about these entities may not exist in a database or other usable form. In that event, one of the SAI's alternatives may be to gather the information from a statistically valid sample of the entities in question, and then use the information to draw conclusions about the characteristics of the overall population."

Sampling is a process whereby an audit procedure is applied to less than 100% of the items within a population to obtain and evaluate evidence about some characteristic of that population, in order to form a conclusion concerning the population. There are 2 major kinds of sampling techniques: judgmental and statistical sampling. Statistical sampling is probability sampling. In probability sampling, every item in the population under audit has a known chance of selection. The decision as to which items in the population are to be selected is left to the laws of chance, not to judgment. Judgemental sampling is not based on probability of every unit being selected and more based towards judgement in selection of sample.

Audit on Water pollution: Sampling

The audit was undertaken in 25 states sampled on the basis of risk assessment. For implementation of National River Conservation Programme (NRCP) sample consisted of 140 out of 1086[5] projects across 19 states, chosen according to risk parameters. 19 lakes[6] across 14 states covered under the National Lake Conservation Programme (NLCP), were selected based on identified risk factors. For ground water, 150 blocks across 25 states were sampled on the basis of defined risk factors like industrial clusters, fluoride/arsenic affected etc.

1.6   Identifying staff and resources needed for the audit

Results of the audit depend largely on the audit teams who would venture out in the field to collect the data and evidence required to prove or disprove audit hypotheses. **Paragraph 134** of ISSAI 5110 states that "SAIs and their auditors and others who carry out environmental audits should demonstrate at least the following level of expertise and attributes: adequate knowledge in all respects of auditing and capability of performing financial, compliance and performance audits; adequate knowledge of environmental auditing acquired by training and practical experience; an independent and unbiased approach; adequate human relations and communication skills."

Audit on Water pollution: Selection of audit team

With such an overarching scope, it was essential to select audit teams carefully based on their knowledge and experience in audit. The audit team at the central level were

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[5] 13 % of total projects and 45 % of total cost of project

[6] 33 % of total number and 78 % of total cost of the project

selected much before the start of the actual audit and were a part of the stakeholders' conference as well as the International conference; as such, they were part of the planning process itself. This helped to familiarise themselves with the issues involved in the audit, both the environment issues as well as the technical issues involved in the audit.

2. Suggested exercises

- If you were doing an audit of solid waste management in your state, list out some of the sources of information you would use to collect background information. What are the broad categories under which you would collect this information?

- What could some innovative methods you would use to scope an audit, say if you were carrying out an audit of "Protection of Mangroves in India"?

- If you were to carry out A PA on Project Elephant, list some tentative audit objectives from Programme summary provided below:

The elephant is the largest terrestrial mammal of India. Elephants being wide ranging animals require large areas. Their requirement of food and water is very high and therefore their population can be supported only by forests that are under optimal conditions. The status of elephant can be the best indicator of the status of the forests. Asian elephants were believed to be widely distributed – from Tigris – Euphrates in West Asia eastward through Persia into the Indian sub-continent , South and Southeast Asia including Sri Lanka , Java , Sumatra , Borneo and up to North China. However currently they are confined to Indian Subcontinent, South East Asia and some Asian Islands - Sri Lanka, Indonesia and Malaysia. About half of the Asian elephant population is in India. The current distribution of wild elephant in India is confined to South India; North East including North West Bengal; Central Indian states of Orissa, South WB and Jharkhand; and North West India in Uttarakhand and UP. Project Elephant (PE) was launched by the Government of India in the year 1992 as a Centrally Sponsored Scheme with following objectives: to protect elephants, their habitat & corridors, to address issues of man-animal conflict and welfare of domesticated elephants. Financial and technical support is being provided to major elephant bearing States in the country. The Project is being mainly implemented in 13 States / UTs , viz. Andhra Pradesh , Arunachal Pradesh , Assam , Jharkhand , Karnataka , Kerala , Meghalaya , Nagaland , Orissa , Tamil Nadu , Uttaranchal , Uttar Pradesh and West Bengal. Small support is also being given to Maharashtra and Chhattisgarh. Main activities under the Project are as follows: ecological restoration of existing natural habitats and migratory routes of elephants; development of scientific and planned management for conservation of elephant habitats and viable population of Wild Asiatic elephants in India; promotion of measures for mitigation of man elephant conflict in crucial habitats and moderating pressures of human and domestic stock activities in crucial elephant habitats; strengthening of measures for protection of Wild elephants form poachers and unnatural causes of death; research on Elephant management related issues; public education and awareness programmes; eco-development and Veterinary care. Till now 26 Elephant Reserves (ERs) extending over about 60,000 sq km has been formally

notified by various State Governments. Consent for establishment 6 more ERs - Baitarini ER & South Orissa ER in Orissa, Lemru & Badalkhod in Chattisgarh and Ganga-Jamuna (Shiwalik) ER in U.P, Khasi ER in Meghalaya has been accorded by MOEF. The concerned State Governments are yet to notify these ERs.

- List some of the authoritative and non-authoritative sources of criteria that you would use for the audit outlined above.

- What is the kind of sampling plan you would you draw up for the audit mentioned above?

Session 4:

Conducting the audit and developing findings, conclusions and recommendations

Learning objectives

> 1. Steps in conducting the audit
>
> 2. Evaluating audit evidence and Analysis of results
>
> 3. Developing findings, conclusions and recommendations

1.   Entry Conference

According to *INTOSAI's Performance Auditing guidelines*, "the SAI should endeavour to give the audited entities reasonable notice of its intention to commence an audit and should discuss the general scope of the study with relevant officers. The audit manager in charge of the study – or the project leader –normally makes the initial contact with the auditee(s) in order to advise them on matters such as the objectives, timing, duration, and type of audit to be conducted". According to **Paragraph 217** of ISSAI 5110 "Whatever the method or methods used, the SAI may usefully obtain agreement on its methodology from the lead department being audited and (perhaps) from at least some of the other audited entities. Obtaining agreement would be particularly worthwhile in relatively complex audits that require a major resource commitment. Agreement would also greatly reduce the risk that the audit results will be criticised as "unrepresentative" when they are presented."

Audit on Water pollution in India: Entry Conference

In the PA on **Water pollution in India**, entry conference was held with Secretary, MoEF and members of the Central Pollution Control Board, before commencement of the audit, where a presentation was made regarding the scope, methodology, timelines of audit and the audit objectives. In the 25 states, the state Accountant Generals (the heads of the field offices) conducted the Entry Conference with the respective heads in the departments of the State governments.

2.   Field audit process and collection of audit evidence

According to **Paragraph 149** of ISSAI 5110, "competent, relevant and reasonable evidence should be obtained to support the auditor's judgement and conclusions regarding the organisation, programme, activity or function under audit." **Paragraph 211** of ISSAI 5110 states that " since the SAI may not be able to audit every entity involved, it will need to carefully design a methodology that will allow it to draw supportable conclusions about how a given function or activity is implemented nationally. All the available audit techniques like interviews, document/file searches etc., may be a necessary part of the approach. It may also consider using Field Visit: Staff may need to visit a variety of national, regional and local government agencies and possibly non-federal organisations

to ascertain how Government funds have been spent; how well environmental regulatory activities are working; and where improvements can be made. This technique is particularly useful if the SAI needs to obtain a detailed understanding of how an activity is working in a limited number of locations."

The collection of audit evidence takes place as a part of the field audit process when the audit teams visit the location from where information is to be collected, documents to be perused and data to be gathered.

Audit on water pollution in India: Field audit

The field audit commenced from July 2010 and continued up to December 2011. The audit was conducted at two different levels. It was planned and steered by the principal audit office: Office of Principal Director of Audit (Scientific Departments) at Delhi which also conducted the audit of Central Government agencies. At the level of the states, 25 State Accountant Generals steered the audit, with audit teams comprising an Audit Manager and 2-3 other audit personnel.

Detailed checklists were prepared, separate for each audited entity (Department of Environment and Forests in the state, State Pollution Control Board, implementing agencies in the states, monitoring agencies in the state etc.,) and shared with all the audit teams. The audit teams were asked to collect evidence against the audit questions, fill up the audit checklist and mention the evidence they had collected to substantiate their answers to the audit questions. They would then fill up these checklists, link the evidence to the audit questions and send the audit evidence along with the filled in checklists to the office of Principal Director of Audit (Scientific Departments) by the end of December 2010. A sample audit checklist as sent by the states is attached below.

Audit question	Criteria	Audit comment from state AG
1. Did resource mobilization by the state undertaken occur from sources prescribed by NRCD?	Guidelines of NRCP/NLCP	No please. O&M though being the obligation of the State/ Implementing agency has been met from the NLCP funds. Resource mobilization prescribed by NLCD has not been undertaken by the State. Delegation of necessary powers for generation of revenue by the State to the implementing agency has also not been done. State has not allocated responsibility for O&M of each asset created under NLCP to the implementing agency (LAWDA). The authority has realized meagre amount of ₹ 2.52 crore (2005-10), so far on account of revenue by way of building permission, solid waste disposal etc. *Audit scrutiny.*

Before commencement of the actual audit, we had a one day session with all the 25 offices conducting the audit. This helped familiarise audit teams spread across the country with water pollution issues as well as issues relating to audit evidence and evidence analysis.

We kept our contact with these audit teams, formally and informally, throughout the conduct of audit, through e-mail, telephone for clarifying state level issues, clearing doubts, coordination etc. A mid-term assessment meeting took place after three months of filed audit months with all the participating audit teams in which the preliminary findings were discussed. This was useful because it helped identify (and share)the common thread of findings across different states, flag issues unique to specific states as also to emphasize uniformity in audit approach . The principal audit office, Office of Principal Director of Audit (Scientific Departments) shared its findings at the central level with the use of which the first cut of the draft report had been prepared and shared with field audit teams from the states. The expectations of principal audit office that no written reports but only filled-in check lists, duly referenced with supporting key documents, were re-emphasized with the field audit teams. There were no extensions for submission of final drafts by the states as the audit period given, i.e.,6 months, was considered sufficient by all the audit teams.

3. Evaluating audit evidence and Analysis of results

Paragraph 131 of ISSAI 5110 states that "the auditor and the SAI must be, and must be seen to be independent and objective in carrying out environmental audits. They should be fair in their evaluations and in reporting on the outcome of audits." Once audit evidence is gathered, they must be evaluated for sufficiency, reasonableness and reliability to reach audit conclusions.

Audit of water pollution in India: Audit evidence

Audit evidence was mainly in the form of document survey as well as water quality reports, research reports, reports by implementing and monitoring agencies etc. Audit findings were at two levels: (a) those received in the form of completed checklists from all 25 states sampled as well as for the sampled projects and (b) findings that emerged from the audit of agencies of government of India[7]. The finding/conclusion in the completed checklist against each audit question was referenced with the relevant audit evidence. This process took 3 months: January 2011- March 2011. Once the audit findings were analysed, they were collated into excel spread sheets organised state-wise and within a state, further segregated project-wise and linked to validate the result obtained against each audit question. Separately, the raw data captured relating to performance was also compared with criteria (for example water quality criteria reports (with regard to each parameter used to measure extent of pollution[8]) were compared to Water quality criteria set out by Central Pollution Control Board (CPCB). Financial data: expenditure figures, trends of expenditure etc., were also analysed to lead to audit results.

4. Developing findings, conclusions and recommendations

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[7] The agencies being MoEF, CPCB, NRCD, MoWR, CWGB
[8] The parameters being biological oxygen demand (BOD), dissolved oxygen (DO) etc

Once audit evidence is analysed, development of audit findings and conclusions reached during the course of the audit is the next step. The audit conclusions lead to the recommendations.

Audit of water pollution in India: Audit conclusions and recommendations

The collation of audit findings led to two levels of audit conclusions -those where the accountability and responsibility rested with the Centre and those where they rested with the States. The results were referenced against a hierarchy of templates: audit objective, the audit sub-objective as well as the audit question. This ensured that all the findings and the conclusions were linked to the overall audit objectives set out for the report. This was a big challenge: linking audit findings at the level of the audit questions (and sub-questions) drawn from diverse states to the strategic audit objectives. All the audit questions sought to prove or disprove the main audit objectives.

For the central level, the *audit findings* were descriptive in terms of comparing the actual position with the ideal position (criteria). For example, if the audit criteria related to use of biological indicators to measure pollution in rivers, then our audit findings related to the fact whether such biological indicators were developed or not and were these being used to track pollution in rivers. In case, it was not being done for all the rivers but in some of them, then names and stretches of these rivers were mentioned to give the complete picture. Where biological indicators were used for tracking, then year of start of such tracking was also mentioned. An attempt was made to be as comprehensive as possible and not miss out any initiative taken by the government.

For the state level, an attempt was made to convey the results related to that audit finding in terms of percentages linked to the findings at the central level. For example: with regard to preparation of inventory of keystone species, our finding at the central level was "MoEF has not identified keystone species associated with each river and lake for major river systems and lakes in India. This has been done only in the case of Ganga River where river dolphin was identified as a keystone species. Such identification is imperative as it would not only act as indicator of the health of the eco-system but would also help MoEF to design programmes to protect species threatened by water pollution". We concluded that only one state, Himachal Pradesh, had identified the species associated with some of its rivers. No other State had conducted such an exercise. Himachal Pradesh had identified some species of flies[9] like which live in streams. However, these were not keystone species." Both the levels of findings summed up the position with regard to the audit question for the whole country.

In order to o reach the *audit conclusions*, we linked the audit findings to the impact of taking or not taking action on any issue relating to water pollution. For example, one of the conclusions was that; "both Union and State governments have failed to conduct comprehensive assessment of risks to environment and health. Such studies on risk assessment would have enabled them to put in place preventive measures to lessen the

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[9] Species like Perlidae, Taenioperygidae,Ephemerellidae, Heptageneiidae and Hydropsychidae

deleterious impacts of water pollution on human health as well as the fragile freshwater ecosystem."

Because of the sheer wealth of data generated, it was decided that we would have small reports pertaining to each state regarding water pollution and the performance of the sample selected (rivers, lakes, ground water). These state specific reports were easy to write because of the excel spread sheet generated for each state and the sampled river/lake/ground water.

Our *recommendations* emerged from our findings and each of our recommendation could be linked to a particular finding in our report. We tried to be reasonable, practical and specific in our recommendations so that the executive would find this useful to implement them. For example, we recommended in our report that "Monitoring network should be strengthened by converting all monitoring locations into stations and reclassifying them as baseline, trend and flux stations for achieving better quality data. MoEF should also start real time monitoring so that red flags are raised immediately when pollution levels rise alarmingly and remedial action can be taken in time." This was directly linked to our audit findings relating to gaps in tracking pollution of rivers, lakes and ground water.

5.   Suggested exercises

- Briefly list down some of the issues to be discussed during entry conference if you were doing an environment audit on "Management of biomedical waste in Chhattisgarh."

- What are the standards for good audit evidence?

- What kinds of audit methods would you use to analyse audit results to develop audit findings?

- Suppose the audit finding is "despite a lapse of five years from the date of recommendation of the National Forest Commission for the formulation of the State Forest Policy, the same was yet to be notified by the state government", what could be the audit conclusion?

- Suppose the audit finding is "Compilation of data by Audit revealed that as against 2.03 lakh trees to be replanted in lieu of 0.59 lakh trees permitted to be cut during the period 2005-11 in North and South Divisions, only 9000 trees were replanted", what could be the audit conclusion?

- This is an audit finding: "Thus, it can be seen that only in 22 % of the municipalities, waste was collected and in 29 % municipalities, the municipal authorities could not ensure regular collection of waste as envisaged in the municipal solid waste rules. The activities for collection organised by the municipalities was ineffective as out of sampled municipalities, waste was being regularly collected only in nine municipalities, i.e., only in 16 % of the sampled municipalities." What could be possible recommendations?

- This is an audit findings/conclusion " According to Rule 8 of the bio-medical waste rules, every institution generating, collecting, receiving, storing, transporting, treating, disposing and/or handling bio- medical waste and every operator of a bio-medical waste treatment facility, had to seek authorisation from the prescribed authority of the state for handling and disposal of bio- medical waste. Hence, biomedical waste handling and disposal facilities could be set up by a hospital/ health institutions/ private operators only after receipt of authorisation by the prescribed authority. Out of the 180 hospitals sampled in audit, it was noticed that: Only in 29 % of the sampled hospitals, waste disposal facilities were set up after getting authorisation from prescribed authority. In 31 % of the sampled hospitals, waste disposal facilities were set up before getting authorisation from prescribed authority. In 40 % of the sampled hospitals, it could not be verified whether waste disposal facilities were set up subsequent to authorisation. Authorisations by prescribed authority specify the compliance criteria and are subject to verification by PCB. Hospitals/ private operators running waste disposal facilities without authorisation would mean that the compliance criteria would not be adhered to, which might result in hazards to public health as well as contamination of the environment." What could be possible recommendations? Please list at least 2.

- An audit finding regarding relocation of people living inside National Park is as follows "National Wildlife Action Plan 2002-16 (Para I) states that voluntary relocation and rehabilitation of villages out of PAs needs to be undertaken in high conservation value segments of PAs like core segments of NPs. This was also mentioned in Rajasthan Forest policy, 2010 and Rajasthan Environment Policy, 2010 which stated that "relocation of villages close to PA in a phased time bound manner shall be done expeditiously". In 1977, based on Government of India guidelines, 64 villages in core areas of Ranthambhore NP and 28 villages in Sariska WS were identified for relocation. Audit scrutiny revealed that 61 out of 64 villages and 565 out of 1615 families from Ranthambhore NP and 26 out of 28 villages and 606 out of 958 families from Sariska WS have yet to be relocated even 35 years after their identification and relocation process shows no sign of completion". What would be your audit conclusion and recommendation, keeping in mind the facts that (i) the National level policy talks only of voluntary relocation from Protected Area (ii) moving people from where they have lived for centuries is a human rights issue (iii) many people who have relocated have come back and demanded higher compensation (iv) tigers do need an inviolate space to prosper and villages inside the Protected Areas pose a threat to the survival of tigers.

Session 5:

Reporting

Learning objectives

1. Steps in preparing a draft audit report

2. Conducting Exit conference

3. Preparing the Final audit report

1.   Preparing a draft audit report

Paragraph 154 of ISSAI 5110 states that "written audit reports should be submitted to the management of the audited entity as well as to its governing body, with reference to the particular circumstances of the SAI. Depending on the nature of the audit, the report may include an opinion on the financial information or on various other matters – such as compliance with the mandate of the audited entity, performance or (the subject of this guide) environment-related activities."

According to ISSAI 40 Quality Control For SAIs, Element 5: Performance Audits and Other Works, International Standard on Quality Control (ISQC) 1 key principle adapted for SAIS states that "An SAI shall establish policies and procedures designed to provide it with reasonable assurance that its audits and other works are carried out in accordance with relevant standards and applicable legal and regulatory requirements and that the SAI issues reports that are appropriate in the circumstances. Such policies and procedures should include a) matters relevant to promoting consistency in the quality of the work performed b) supervision responsibilities and c) review responsibilities.

Audit on water pollution in India: Reporting

Reporting was done in 2 parts—Part 1 gave the overall picture with focus on action taken by the government at the central level and summarised position of the states. Part 2 dealt with individual states and performance of sampled projects. It gave a short overview of water pollution issues in that state.

We discussed the Report in 6 chapters. Chapter 1 dealt with the introduction and chapters 2-6 dealt with each of the identified audit objectives. At the end of each chapter, audit conclusion was drawn against the audit objective with which the chapter commenced. This linked our findings and conclusions directly to the objectives that we had framed at the beginning of the report.

Once we had the whole report in place, it was referred to a separate wing within the Office of Principal Director of Audit (Scientific Departments): the Reports Section, for independent quality assurance on audit evidence and conclusions. A copy of this was sent

to the Headquarters of SAI, India: CAG office, for approval. The quality assurance process at the Headquarters office started at this stage. A copy was also sent to the 25 state Accountant Generals for their comments and replies to specific audit observations raised in the report. As mentioned earlier, the state Accountant Generals were required to send us only completed (and referenced) check lists and had been specifically asked not to send the principal audit office, the Office of Principal Director of Audit (Scientific Departments), a written report. Therefore, the compiled draft report was shared with the field offices for confirmation of facts and for the management response: specifically, the replies and details of the exit conferences with the management. Simultaneously, the draft report was sent to Ministry of Environment and Forests (MoEF) in April 2010 for their comments.

An **exit conference** was held with MoEF in May 2010 to present and discuss the Report with the government on our major findings, conclusions and recommendations. While assuring detailed replies to audit observations, MoEF also informed us of a committee set up to draw up a roadmap to implement audit recommendations in the report. The **management response** came from separate sources at the Central level: from MoEF, MoWR, CPCB and CGWB within 15-20 days. The replies were incorporated in the relevant portions of the report. In areas where audit conclusions varied from the management response, the conclusions were suitably nuanced or the area of disagreement was noted in the Report.

Simultaneously, the next level of audit quality assurance had been set into motion in the Headquarters of SAI, India, the CAG office. In a fairly detailed exercise which percolates down to checking of primary audit evidence, the Report was reviewed threadbare. This is also a time consuming exercise and took two months for completion. The final report (called the bond copy) was sent to the CAG for signature; the bond copy had factored the management replies and the issues which arose in the audit quality exercise at the CAG office.

4.   Suggested exercises

• Briefly list down some of the issues to be discussed during entry conference if you were doing an environment audit on "Management of biomedical waste in Chhattisgarh." The audit issues would include availability of data about generation and treatment of biomedical waste, implementation of Bio Medical (Management and Handling) rules, monitoring mechanism in place to ensure that this contagious waste is treated and disposed as per the rules and accountability for proper management of bio medical waste.

• What are the standards for good audit evidence?

Session 6:

Challenges and way forward

Learning objectives

1. Summary of challenges in doing audit of water pollution

2. Summary of good practices

3. **Environment audit little different from other audits**

4. Conclusion

1.   Summary of challenges in the audit of water pollution

- Lack of data/ poor quality of data on pollution levels, waste generation, funding (as funding can be from multiple sources) etc. often data is missing so audit had to look at alternative sources or generate its own data to establish findings and conclusions. For eg: there was no data on industrial pollution according to sources like distilleries, tanneries, paper factories etc. data was also lacking regarding absolute values of pollution levels in the rivers/lakes, the data given to us was an average over 6 months and which masked the actual levels of pollution. No data also existed about levels of pollution caused by agriculture and other such economic activities. Multiplicity of authorities dealing with programmes to prevent pollution and tackle environment issues. As a result, it is often difficult to establish accountability and responsibility. For eg: the responsibility for conservation of lakes fall under multiplicity of authorities like the urban development department, the municipality, the Lake Development Agency/Corporation, State Pollution Control Board, Heritage commissions etc.

- There is often an absence of clear, measurable criteria for environment programmes or environment related action taken by the government which renders audit very difficult. In this audit, authoritative criteria on certain parameters were absent in governmental policy, acts, programmes, monitoring requirement etc., and we had to use non-authoritative sources of criteria.

- Since the scope of the report was very large, it was recognized that it would take almost one and a half years for completion, substantially longer than normal performance audits. The expectations from the report, sometimes competing amongst each other: the topicality, relevance, importance of the topic, cost of audit, firm conclusions & overarching approach, challenges in aggregating data from diverse locations in the country and audited by different audit teams spread across the country etc., challenges in ensuring uniformity in audit quality and audit approach, had to be balanced while deciding on the scope of the audit. The

voluminous data collected in the process led to challenges in collation and cross-referencing evidence; it also made the audit quality assurance more protracted.

- Some of the concepts relating to control of pollution were scientific in nature like for example—the impact of water pollution on freshwater ecosystems especially those that are endemic in nature like river dolphins, gharials etc. So auditors need to be trained to better acquaint them with technical issues involved.

2. **Summary of good practices: audit of water pollution**

- The two environment audit reports on Waste Management in India and Water pollution, spurred SAI India to look at environment issues holistically rather in a piece meal manner (as audit of projects/programmes). A vast audit scope helped provide a bird's eye view on water pollution in India, with all its ramifications and impact across 25 states. Subsequently, SAI, India, began to scope some of its audits for a holistic overview of environment issues - an example being the audit of Environment management in Indian Railways which looks at the way operation of environment affects the environment in its entirety.
- The Report could go beyond compliance issues and look at environmental impact of gaps in policy and in implementation. This audit also sensitized the state Accountant Generals about the importance of environment audits, especially since implementation of all environment rules and programmes takes place at the state level.
- Greater participation of stakeholders in selection of topic, scoping etc., gave the audit process greater depth. The general public, being the ultimate stakeholder for SAI, India, also got an avenue to participate in voicing concerns on this critical area of water pollution.
- We made extensive use of IT applications to collate audit findings, necessitated in part by the vast scope of the audit. As a result, we could generate from the check-list, state-wise findings against each audit objective. This facilitated State Accountant Generals to prepare state reports to sensitize their respective state governments on the issue.

3. **Environment audit little different from other audits**

- Environment audit issues may not be important from the materiality point of view. These are still critical since the consequences of inaction are grave and sometime, irreversible. Consequences of inaction could be disappearance of a species forever, pollution levels becoming so high that remedial action may not be possible or will call for massive investment etc. These risks must be factored by the auditor while choosing topics for audit.
- Absence of a stated governmental policy on critical issues is a significant audit area of enquiry. As a result, environment issues do not get addressed in programmes and plans of action. This may have a detrimental and often irreversible effect on environment.

- Environment issues are not only about protecting the environment or eco-systems but these issues also have an impact on public health. For example air pollution or water pollution has significant impacts on health of citizens. This should also be explored when doing environment audit.
- Since environment is a specialised subject, it is important to involve all kinds of stakeholders like ministry, regulators, civil society organisations working in the field, private organisations, the public, technical institutes etc., while deciding audit issues.

- Criteria for audit are often missing in the case of environment audit which impedes audit. The government may not have laid down a standard or rule or law to control pollution, or save species/ecosystems. It may not have also considered all the sources causing pollution/degradation of environment into account while making laws or policies. In such case, it is important to use non-authoritative sources of criteria like study/ research reports by reputed/ UN organisations like United Nations Environment Programme, World health Organisation etc. The government of India is also a party to many international treaties and conventions to protect the environment. Treaties/conventions specific to environment issue being audited can be used as a source of audit criteria. For example, in the audit of waste management, we found that the government had not encouraged waste reuse, recycling and reduction in framing its rules for management of waste. So we used criteria from Agenda 21 which India has ratified and which specifically addresses the fact that policy/plans for waste management should focus on waste reuse, recycle and reduction instead of only waste disposal.
- Normally a performance auditor is able to quantify the failure to act or not meet audit criteria, in terms of loss or some financial implication. This is not so in the case of environment audits. Hence, to draw attention to environment issues, it is important to link audit findings on non-performance to its effect on the environment.
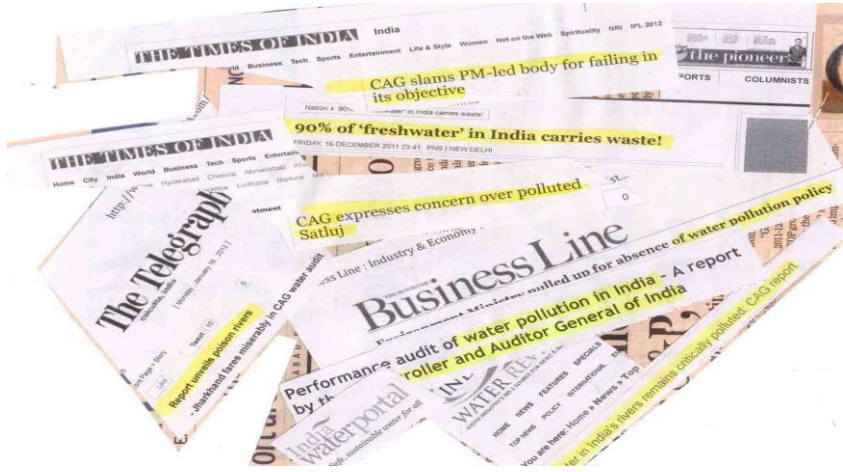
4.   Suggested exercises

- In what other ways do you think environment audits are different from other Performance audits?
- List some of the ways in which you would meet two challenges faced during environment audit.

5.   Final exercise

- Prepare an audit plan for a performance audit on a selected topic with environment focus in your state

Conclusion

The report was presented to the Parliament in December 2011 and was widely reported in the press. MoEF set up a committee to draw up a roadmap to implement audit recommendations in the report. The Committee consisted of representatives of MoEF and Ministry of Water Resources, Ministry of Urban Development and a representative of CAG. The Committee eventually proposed strategic interventions like capacity building of Central and State Pollution Control Boards (PCBs); institutional reforms in Central and State PCBs; need to suitably penalize environment violations; amendments to be made to Environment Protection Act, policy to be framed by Ministry of Water Resources for rational use of water by agriculture, industrial and domestic purposes; policy to be framed by Ministry of Agriculture check pollution of surface and ground water by agricultural runoff etc. 34 specific recommendations were made by the Committee under these broad areas.

Annex 1: list of reports/studies consulted to collect background information

1. United Nations Water Report (1st, 2nd and 3rd Report)
2. The Cost of Water Pollution in India by A. Maria, CERNA, Ecole Nationale Superieure des Mines de Paris, France : paper presented at the Conference on Market development of Water and Waste Technologies through Environmental Economics, 30th to 31st October, 2003, Delhi
3. Ecosystem based Management : Markers for assessing progress published by united nations Environment program and Global Programme of Action for the Protection of Marine Environment from Land Based Activities
4. Guidelines for environmental monitoring of water resources projects—Government of India, Central Water Commission, Environmental Management Directorate
5. GEMs Water: State of Water report by United nations Environment Program
6. Water for the next 30 years—Averting the looming water crisis: Mar del Plata conference
7. Water Security: a Preliminary Assessment of Policy progress since Rio by World Water Assessment Program
8. Agenda 21
9. European Water framework Directive
10. Clean Water Act, USA
11. Water in a changing World by United nations World Water Development Report
12. Water Quality reader published by the united nations Water Decade program on Advocacy and communications
13. Pilot Analysis of global ecosystems—water quality in freshwater Systems
14. Cleaning the Waters—a focus on water quality solution by United Nations Environment Program
15. National Water Quality Monitoring Programmes and Laboratories by UNEP
16. Ground water Pollution and contamination in India—the emerging Challenge by M Dinesh Kumar and Tushar Shah: International Water Management Institute, South Asia Regional Program, India
17. Status of ground water quality in India by Central Pollution control Board
18. Monitoring and evaluation indicators for GEF International Waters Projects published by Global Environment Facility
19. Introduction to IWRM guidelines at River Basin Level by UN World Water Assessment program
20. Managing lakes and their basins for sustainable use: by International lake Environment Committee Foundation and Global Environment Facility
21. Living Planet report 2010 by World Wide Fund for nature
22. Management of lakes in India by MS Reddy and NVV Char
23. Ecosystems and Human wellbeing: Wetlands and water by World resources Institute
24. Water quality monitoring in India—achievements and constraints , CPCB
25. Water Quality Monitoring and Assessment: Current Status and future needs by UNEP and GEMs
26. Protocol for Water quality monitoring by Government of Indi under Hydrology Project
27. Water Quality for ecosystems and Human Health by UNEP
28. Water quality Monitoring—a practical guide for design and implementation of freshwater quality studies and monitoring programs: Published by UNEP
29. Wuhan Declaration: 13th World Lake UNEP year book 2010Conference