

## **AUDITING ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)**

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### **Introduction**

In view of the global concern over degradation of natural resources, ozone layer depletion, global warming, climate change, consequent sensitization towards environmental protection and sustainable development, industry and business have been increasingly adopting Environmental Management System (EMS) to meet the expectations of the stakeholders. While ISO 9001:2000 deals with Quality Management System, ISO 14000 series address environmental management systems, environmental auditing, environmental performance evaluation, life cycle assessment, environmental labeling and environmental aspects in product standards. The International Standards Organization defines EMS as 'the part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy'.

This paper enunciates global and national initiatives concerning environmental protection and sustainable development, role of the public auditors in factoring environmental concerns and the concept of sustainable development in auditing, essential elements of EMS, important areas to be looked into while conducting an audit of EMS, SAI India's experience in EA and possible benefits of successful implementation of EMS.

### **Global initiatives on Environmental Protection**

The first major international event where world nations got seized of the problems arising out of uncontrolled exploitation of natural resources and environmental degradation was the UN conference on human environment in Stockholm in 1972. The Earth Summit held in Rio de Janeiro in 1992 was instrumental in formulating possible strategies to protect the future of life on earth in the form of Agenda 21, action plan and blue print for sustainable development for the

\* The author is a member of the Indian Audit & Accounts Service and is presently Pr. Director of Audit (Central), Mumbai. He is an alumnus from the London School of Economics twenty first century. In the conference, 168 countries signed the Convention on Biological Diversity, which requires countries to identify and monitor their genetic resources and draw plans and action programs to conserve including setting up protected areas. Kyoto Protocol was signed in 1997 wherein 166 countries committed themselves to reducing or restricting green house gases emissions. The world summit on sustainable development in Johannesburg in 2002 was another important landmark in the global imperative of sustainable development, because it looked at the road traveled so far, evaluated successes and shortcomings, and proclaimed again the collective commitment to sustainability, without which development is meaningless.

## **Sustainable Development**

According to Brundtland Commission, sustainable development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Sustainable development incorporates essentially three elements; firstly, protecting the environment and using natural resources wisely; secondly, recognizing the needs of everyone while ensuring social progress; and finally maintaining high level of economic growth. It is, therefore, essentially a trade off between otherwise conflicting interests of economic advancement, social progress and environmental protection.

## **India’s Approach to Sustainable Development**

Along with the international efforts and commitments undertaken, various environmental legislations were enacted in our country followed by rules and regulations framed under these acts. Some of the significant legislations are the Factories Act, 1948, the Mines Act, 1952, Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Public Liability Insurance Act, 1991, the Energy Conservation Act, 2001, and the all encompassing Environmental Protection Act, 1986, empowering the government to bring out appropriate regulations to address any pressing environmental concerns. A few important rules framed under the Environmental Protection Act, 1986 are the Environmental Protection Rules, 1986, the Biomedical Waste (Management and Handling) Rules, 1998, the Hazardous Wastes (Management and Handling) Rules, 1989, the Municipal Solid Wastes (Management and Handling) Rules, 2000, the Ozone Depleting Substances (Regulation and Control) Rules, 2000 and the Noise Pollution (Regulation and Control) Rules, 2000. Regulatory and implementing institutional infrastructure have been set up, and environmental standards for ambient air, water and waste disposal have been fixed, entrusting significant responsibilities to both private and public sectors.

## **Role of Public Auditor in Environmental Auditing**

As per the CAG’s (DPC) Act, 1971, the Supreme Audit Institution (SAI) of India has the mandate to conduct all types of Environmental Auditing. The objectives of environmental auditing are enlisted in Chapter 19 of MSO (Audit) to ensure that appropriate and adequate policy and procedures are in place and duly complied with to achieve sustainable development. After the Rio Conference, INTOSAI Working Group on Environmental Auditing prepared guidelines and standards for helping SAIs in conducting effective EA with financial, compliance and performance audit frameworks, depending on the mandate of the respective SAI.

Realizing the significance of factoring environmental issues and sustainable development concepts in different streams of SAI India’s auditing, the CAG designated office of the Principal Director (Scientific Departments) as nodal office for conducting EA and one of the training institutions as nodal training centre for capacity building. As of 2006, about 500 audit professionals have been trained and EAs initiated in different SAI India’s audit spheres with internationally accepted framework and methodology.

As the concept of sustainable development has become an integral part of development planning, and both public and private sectors have increasingly adopted EMS to ensure compliance with applicable legislations and regulations, public auditors cannot absolve

themselves of the responsibility of auditing EMS while conducting regularity audits (financial audit, compliance audit) and performance audits. At the macro level, while auditing the ministries, action taken in compliance with international environmental accords ratified by the government can be examined. Available information on accord, reasons for non-compliance, underlying environmental risks, obligation to comply with an accord, period of implementation and status can be subjected to audit scrutiny. Formulation of policy, strategic planning, design of national programs, projects, schemes as per the laid down policies can be studied with reference to the committed environmental goals and targets.

Performance audits of regulatory authorities with reference to compliance of environmental objectives and targets and enforcement of applicable mandatory rules and regulations become inevitable in EA. At micro level, it is imperative for the public auditors to factor environmental concerns for sustainable development in audit of implementation of projects, programs and schemes at state level, municipal and panchayat levels in urban and local body's audit. EMS auditors are certified under ISO 14001 and the public auditors, while conducting performance audit of EMS of the organization, need to evaluate the entire process of implementation of EMS and offer valuable insights into how far EMS has achieved its objectives and targets. As far as compliance of environmental regulations by the private sector organizations are concerned, public auditors can do it indirectly through an effective performance audit of regulatory organizations such as Central Pollution Control Board and State Pollution Control Boards and central and state laboratories, institutions and centers specifically aiming at evaluating their efficiency and effectiveness in performing their assigned responsibilities.

### **ISO 14001 Standard: Environmental Management System**

Following the success of the ISO 9000 series of quality management standards, the ISO 14000 series of standards have been designed to cover the environmental issues for the organizations in the global markets. ISO 14001:1996 standard specifies requirements for an EMS to enable an organization to formulate a policy and objectives keeping in view mandatory legislative compliance and information about significant environmental impacts. It applies to those environmental aspects, which the organization can control and over which it can be expected to have an influence. EMS helps the organization to identify its environmental goals and establish a program for monitoring its progress. There are essentially three components of an EMS: firstly, a written program requiring the organization to commit to producing the highest quality product with the lowest possible environmental impact; secondly, education and training; and finally, knowledge of applicable local and central environmental regulations. EMS works on Deming cycle of 'Plan, Do, Check and Act' and demands the organization to adopt a continual cycle of planning, implementing, reviewing, and continuously improving the actions that an organization takes to meet its environmental obligations.

### **Elements of EMS and Audit of EMS**

The ISO 14001 EMS standard essentially consists of seventeen elements and an attempt has been made to highlight the important audit coverage in respect to each of them.

- (i) Environmental policy – Clause 4.2 of the ISO 14001 requires that the top management shall define the organization’s environmental policy. Audit can examine the following:
- Is the environmental policy appropriate to the nature, scale and environmental impacts of its activities, products or services?
  - Does the policy include a commitment to continual improvement and prevention of pollution?
  - Does it include a commitment to comply with relevant environmental legislation and regulations, and with other requirements to which the organization subscribes to?
  - Does it provide the framework for setting and reviewing environmental objectives and targets?
  - Is the policy documented, implemented, maintained, communicated to all employees, and is available to the public?
- (ii) Environmental aspects – The organization should identify environmental attributes of its products, activities and services and determine those that could have significant impacts on the environment. Factors to be kept in mind are ecological effects, human health impacts, catastrophic effects, resource depletion, and probability of occurrence of impacts, regulatory impacts and financial and other business concerns. While evaluating environmental aspects, an auditor should consider mandatory standards prescribed by the regulatory authorities for air emissions, water effluence, solid and hazardous waste, land contamination, land, raw material and resource use. He should also be aware of concerns raised by the community regarding noise, odour, dust, traffic pollution etc. in normal, shut down and emergencies. Audit focus/checks can be on the following:
- Has the organization identified environmental aspects correctly with reference to its specific activities, products or services?
  - Does it comply with applicable legal and regulatory requirements?
  - Have the objectives and targets derived from evaluation process?
  - Has the environmental impact, whether adverse or beneficial, wholly or partially resulting from an organization’s activities, products or services been correctly perceived and factored into EMS?
- (iii) Legal and other requirements – The organization should identify applicable environmental laws, rules, and other requirements, which should be complied with. EMS requires the organization to establish an up to date documentation process and communicate to all concerned for planning and compliance. It has to evaluate how far EMS has addressed compliance with the mandatory regulations.
- (iv) The organization must establish environmental goals and targets in line with its environmental policy, taking into account anticipated environmental impacts and other relevant factors. The public auditor who audits EMS should examine the process of determination of targets and achievements against each of them. He can also see whether objectives and targets are

derived from the organization's environmental policy and whether the performance of objectives and targets are reviewed and monitored periodically by the top management for taking appropriate, corrective and preventive actions for continual improvement.

- (v) Environmental management programme – The organization should make an environmental action plan to achieve objectives and targets. An effective environmental management programme is a road map for achieving environmental goals. It shall specify designation of responsibility for achieving objectives and targets at each relevant functional level of the organization as well as the means and time frame by which they are to be achieved. Audit can examine whether the environmental action plan is in conformity with set objectives and targets and it delineates actions for application of programmes to new or modified activities, products or services.
- (vi) Structure and responsibility – EMS enables the organization to establish roles and responsibilities and allocate appropriate resources to achieve the objectives. A public auditor can independently assess whether adequate financial, technological, human resources with specialized skills have been provided to undertake the tasks. EMS requires appointment of a management representative who is assertive, knowledgeable and independent. Auditor needs to evaluate the entire organizational structure, assess the adequacy of resources and see whether environmental management is integrated with other business functions.
- (vii) Training awareness and competence – EMS requires that employees are well aware of environmental concerns and adequately trained to competently carry out their assigned environmental responsibilities. The entire process of training needs to be evaluated independently in audit. The organization should identify its training needs and ensure that all personnel, whose work may create a significant impact on environment, have received appropriate training.
- (viii) Communication – EMS demands that the organization establishes internal and external communications on environmental management issues. Auditor needs to evaluate the effectiveness of internal communication between the various levels and functions of the organization and the process of receiving, documenting and responding to relevant communication from external interested parties.
- (ix) EMS documentation – EMS documentation describes how EMS is being implemented in the organization in its entirety. EMS documentation may be maintained either on paper or electronically and it inevitably describes the core elements of the management system and their interaction and provides directions to related documentation. Auditor should examine documented environmental policy, organizational structure and key responsibilities, description of ISO 14001 requirements and how far they have been complied with. He should refer to key procedures, controls and other system elements, evaluate emergency response plans and training programmes.

- (x) Document control – EMS ensures effective management of procedures and other system documents. The auditor can go through basic EMS manual, Environmental Management Programme manual and EMS procedures manual and come to an independent judgment on economy, efficiency and effectiveness of implementation of EMS in the organization with reference to the standard. It should be kept in mind that EMS documentation should be dynamic keeping in line with changing organizational responsibilities with reference to new regulations.
- (xi) Operational control – Organization is required to identify, plan and manage the operations and activities in line with its environmental policy, objectives and targets. Auditors should see activities assigned to prevent pollution and conserve resources. While developing new products, designing new process and reengineering activities for strategic environmental management, the organization has to take into account environmental opportunities, anticipating change and responding to emerging trends.
- (xii) Emergency preparedness and response – EMS requires identification of potential emergencies and developing procedures for preventing and responding to such eventualities. Auditor should assess the risk potential for accidents and emergencies. Emergencies may include process hazards such as fire, natural disasters and accidental emissions of toxicants. The main emphasis in audit is to evaluate the industry's preparedness for potential accidents and emergencies with a view to substantially minimize the impact of uncontrolled events. The auditor shall review and comment, where necessary the organization's emergency preparedness and response procedure, in particular, after the occurrence of accidents. The auditor can have an independent assessment by checking how far the organization is periodically testing such procedures where practicable.
- (xiii) Monitoring and measurement – EMS requires effective monitoring of key activities and tracking of performance. Auditor must ascertain operations and activities having significant environmental impacts, key characteristics of these operations and activities and methodology followed in measuring the key characteristics. In EMS audit, performance indicators such as quantity of toxic emissions per unit of production, quantity of hazardous waste generated per year, number of employees who have undergone environmental training, average time taken for resolving nonconformities, energy use per unit of production and percentage of solid waste recycled/ reused.
- (xiv) Nonconformity and corrective and preventive action – Nonconformity refers to a situation when the system does not meet the EMS criteria or its implementation is not consistent with the ISO 14001 standard. Auditor should analyze system deficiencies to identify problems, root causes and to oversee whether corrective and preventive actions are identified and implemented to rectify the deficiencies. There should be documentation indicating corrective actions taken from time to time.

- (xv) Records – Records are important to ensure proper functioning of EMS as well as satisfying the regulatory authorities. Key issues in records management are identification of records to be maintained, authority who keeps them, and where and how they are kept, the retention time and how they are accessed, stored and disposed.
- (xvi) EMS audit – EMS audit is generally conducted by a qualified EMS auditor. It refers to a systematic and documented verification process to determine whether an organization's EMS conforms to the audit criteria set by the organization and for communication of the audit results to the top management. An effective EMS programme requires developing audit procedures and protocols based on the environmental importance of the activity concerned, determination of audit frequency and schedule, deployment of trained auditor and maintenance of updated audit records. A public auditor can evaluate the effectiveness and efficiency of EMS auditor by independently reviewing the entire process of implementation of EMS in an organization with reference to the standard, applicable legislative and regulatory requirements, and environmental policy set by the top management.
- (xvii) Management review – EMS requires that the organization's top management reviews the EMS to ensure its continuing suitability, adequacy and effectiveness. Auditor should keep in mind new standards, legislations, regulations and environmental performance indicators and oversee how far the EMS is in compliance with them. He should also obtain scientific/technical data on products, materials and processes used and how far they are in alignment with environmental regulations. The key issue is whether the EMS is suitable, efficient, effective and cost effective under the given circumstances of the organization. Management reviews are essential for continual improvement and ensuring that the EMS continues to meet the organization's needs. The auditor should go through the internal audit reports and corrective and remedial action taken as well as reports of emergencies such as spills, leaks and incidents, accidents and corrective and preventive action taken thereafter to avert such occurrences in future.

### **SAI India's EA Experience**

Based on scope, and methodology, INTOSAI WGEA categorizes EA into five types: one, compliance audit of environmental laws; two, performance audit of environmental programs; three, environmental impact of any program or activity; fourth, evaluation of proposed environmental policies; and, finally audit of EMS.

Of the five groups EAs, SAI India had already produced reports falling in the first three categories, though INTOSAI guidelines might not have been fully used in preparation of these reports. Reviewing the CAG's central and state reports during 2001 to 2003, about 77 EA reports could be identified on varied subjects ranging from performance audit of Ganga Action Plan, 2000 to compliance audits of applicable environmental regulations on air, water, solid waste management, hospital waste management, biodiversity etc. These reports also provided, in some cases, key inferences, valuable database and

causative analyses for failures and non achievement of objectives with a view to help the executive making appropriate changes in policy formulation and strategy. There are few CAG reports falling in the fourth category of EA, commenting on the environmental impact of non-environmental program or any program or activity till 2006 or so.

Reviewing the SAI India reports of 2006, it is seen that Report No.4 – Union Government (Defense Services) contains performance reports on three naval projects – construction of a naval academy, a naval base and modernization of a navy hospital – where environmental impact has been commented upon. These three projects are not essentially environmental projects, but audit has commented environmental impact on coastal ecosystems, destruction of flora, fauna and degradation of beaches. Report No.5 of 2006 – Railways includes performance appraisal of medical and health services highlighting non-maintenance of the prescribed standards for drinking water and food products and non-conformity in case of bio-medical waste management in railway hospitals. The Report recommends creation of facilities such as autoclave/ incinerator for treatment of biomedical waste. Report No.2 of 2006 on Department of Atomic Energy comments on non-installation of incinerator system even after a lapse of nine years; causing environmental hazard by inefficient nuclear waste management. Report No. 12 comments delay of more than five years in commissioning of Air Pollution Control System by a plant of BHEL continuously causing air pollution, despite having incurred expenditure for prevention. The failure of BHEL is clearly in violation of Environmental (Protection) Rules, 1986 and Air Pollution Act 1981 which make it obligatory on the company to reduce the air pollution to an acceptable level; consequently health and safety of local surroundings is under threat for more than 5 years now. Performance Audit Report No.18 of 2006 on ‘Conservation and Protection of Tigers in Tiger Reserves’ is entirely a performance audit of an environmental project and hence undoubtedly a full-fledged EA report. The report, highlights amongst others, the conflict between promotion of tourism to earn revenue and consequential ecological problems of the tiger habitat and this conflict remains unresolved; the inability of the authorities to find a satisfactory solution to the relocation of people living within the tiger reserves and to remove prevention of encroachment, has naturally not eased the biotic pressure on the tiger population.

As far as audit of EMS and Environmental Impact Assessment reports are concerned, audit of EMS of BPCL is under consideration; EA reports on Mumbai Port Trust and Jawaharlal Port Trust are in different stages of approval and finalization. In fact, there are, so far, no exclusive EA reports on ports attempted anywhere and no benchmarks or models are currently available for attempting EA on ports. SAI India, therefore, applied not only INTOSAI guidelines, methodology and framework for general guidelines, but also another international benchmark on port specific issues – Environmental Management Handbook of American Association of Port Authorities. While mandatory environmental acts, rules and notifications provide indisputable criteria for performance audit with environmental perspective, SAI has to discuss environmental issues pertaining to land management, monitoring of water, air and noise pollution, hazardous waste management, afforestation, green belt and ship breaking in these studies.

In so far as financial audit – certification of accounts of PSUs, autonomous bodies and other organizations - is concerned, ICAI is yet to bring out environmental accounting standards and till such time, auditors can only use existing standards for factoring

environmental costs including contingent costs, liabilities including contingent liabilities and disclosure. Certified Management Accountant (CMA) guideline categorizes environmental costs as regulatory, upfront, back end, voluntary, contingent, image and relationship costs. Unless and until acceptable accounting standards are evolved, environmental audit of Balance Sheets, Profit and Loss Accounts of companies, Income and Expenditure accounts of other bodies and organizations can be done to a limited extent only. However, CAG's Report 11 of 2006 contains under Para 2 (vi), a comment on non-provision of liability to the extent of Rs.7 crore for removal of unauthorized hutments at Indira Gandhi International (IGI) Airport by Municipal Corporation of Delhi. Significant findings of statutory auditors include (para 1.5.2 of 2006) a comment on Brahmaputra Valley Fertilizer Corporation Ltd. – "the Company did not recognize possible impairment loss to the extent of Rs.38.83 crore in respect of unviable Ammonia – I Plant". Para 1.54 on Central Coal Fields Ltd. comments on non-provision of sunk cost of dropped project, prospecting, boring and development expenses of project not implemented since 1992-93.

It is evident from the above analysis, sustainable development concerns and environmental perspective are increasingly being factored in SAI India's reports with compliance audit, financial audit and performance audit frameworks, keeping in pace with government's change in policy, dynamic environmental regulations and standards. In compliance with ratified international accords, Government of India has taken significant steps towards integrating sustainable development concepts in policy formulation, strategic planning, and design of programmes, projects and schemes, cutting across economic, social and environmental sectors. Adoption of Clean Development Mechanism prescribes technological solutions to environmental problems in economic sectors like transport, energy, agriculture and industry. In social sectors like poverty eradication, human resource development, urban governance and service area, sustainable development concepts are being embedded. In so far as environmental resources are concerned, though legal and regulatory frameworks have been created to protect environment and reduce impact on air, water, land, forestry, biodiversity, and marine ecosystem, it is the responsibility of public auditors to increasingly use EA for reporting sustainable development status to the stakeholders especially the Parliament while auditing economic, social and environmental sectors.

## **Conclusion**

Successful implementation of EMS helps the organization to derive substantial benefits such as raw material savings from complete processing, substitution, recycling of product inputs; increase in product yields and byproduct utilization; reduced energy consumption; less downtime due to careful monitoring of processes; commercial viability of waste conversion; reduced cost of material storage, handling and packaging; reduced costs associated with emissions, discharges, waste handling, transport and disposal; improved consistency in product quality emanating from process changes; safer work place and safer products to customers; and higher product resale and scrap value.

The ultimate objective for effective implementation of EMS goes beyond merely obtaining EMS certification, primarily aiming at integrating environmental decision making into the organization's overall management strategy. A performance audit of implementation of EMS in an organization evaluates not only its conformity to

mandatory and applicable environmental acts, rules and regulations but also adequacy, suitability, effectiveness, efficiency, cost effectiveness and economy in implementation of the system, and wherever applicable even factoring ethics and equity concepts for corporate governance and good governance..

As auditing and accounting are inextricably interlinked, the important pre-requisite for effective environmental auditing is sound environmental accounting. Environmental issues and sustainable development concerns may be getting finally integrated into environmental accounting. Consumption of the nation's natural resources, both renewable and non-renewable are not presently accounted for in Natural Resources Accounting and green GDP not derived. In financial accounting, firms and organizations may estimate and report environmental liabilities, including contingent liabilities and environmental costs, including contingent costs. In internal reporting and decision making process, management accounting can use data on costs of possible alternative inputs for raw-materials, utilities like water, electricity, keeping in mind emission/discharge of pollutants and conservation of non-renewable resources. Environmental management accounting can thus help in decision making relating to choice of technology, preventive and remedial measures to be taken for compliance with mandatory environmental regulations, use of inputs, handling of byproducts and thereby achieving competitive advantage and image building. At macro level also, substantial amount of work is yet to be done in the area of Natural Resource Accounting, especially in evolving an acceptable methodology for a System of Environmental Economic Accounting (SEEA), which may finally provide a solid foundation for conducting more effective and purposeful environmental auditing.