

Environmental Audit in Indian Coal Industry

V. K. Rai^{*1}, Dr N. S. Raman², Dr S. K. Choudhary³, Srijana Rai⁴

¹Chief Manager(civil), Mahanadi Coalfields Limited, India

²Dy Director & Head Environmental Audit Division, National Environmental Engineering Research Institute, Nagpur, India

³Professor, K.D.K.College of Engineering, Nagpur, India

⁴Civil Engineering Department, Visveswarayya National Institute of Technology, Nagpur, India

ABSTRACT

Environmental audit has been incorporated as one of the business principles in almost all the industries throughout the world. In India, Regulatory authorities have mandated to submit environmental statement in Form V, which the industry is under obligation to comply. With the evolution of concepts like polluters pay, the identification of pollution generated by the industry has become imperative so that action for pollution prevention and reduction is taken at the earliest stage and at the least possible cost to the industry. The companies have introduced the internal environmental audit, however the time has come that external environmental audit be made mandatory like financial audits. This will help the industry as well as stakeholders both. In Indian coal industries, the submission of environmental statement in form V is scrupulously done as mandated by the rules since 1993 itself, the internal environmental audit has been introduced, since the time of disinvestment of 10 % share of Coal India Ltd in 2010, however the same needs to be strengthened and external environmental audit be made mandatory also to showcase the actual works done in the coal industry in respect of pollution control & prevention. It is in the interest of Coal Industry as well as stakeholders both, as more often than not coal industry has been stamped as the most polluted industry, where as the real problems lie somewhere else and it is the vested interest of everybody to put the blame on the coal industry, which does not bother to defend itself. The third party environmental auditing of the coal industry as well as the regions surrounding the coal belt be done to find the real truth of the pollution. This paper highlights the growth of environmental audit in general and in coal industry in particular and analyses the works done for mitigation of pollution in the coal industry and suggests how external environmental audit will help identify the real causes of pollution in the coal belts, most of which have been declared as critically polluted areas.

Keywords: Environmental Audit, Coal mines, energy audit, efficiency, stakeholders

I. INTRODUCTION

Financial auditing, which originated in the late 1800s, is the precise examination of the financial statements of a business. It can be carried out internally, i.e. by employees of the company concerned. However, the law requires that it is also carried out externally, i.e. by a firm of professional auditors who are not employees of the company being audited.

The financial audit assesses if finances are being managed correctly, i.e. it is a check of the accounting controls within an organisation. The audit thus plays an important role in verifying if an organisation is profitable or not - important information for those running the company. Such information is commonly

referred to as 'the bottom line', i.e. the bottom line of an income statement gives an amount of money which reflects either a profit or loss.

The bottom line, however, does not reflect environmental consequences (e.g. pollution) that may have been incurred in the process of doing business, as these are often difficult to measure it in financial terms. The environmental audit is an attempt to provide information on the environmental performance of a company, and thus include environmental issues in the decision making process.

Environmental auditing is a systematic, documented, periodic and objective process in assessing an organization's activities and services in relation to :

- Assessing compliance with relevant statutory and internal requirements
- Facilitating management control of environmental practices
- Promoting good environmental management
- Maintaining credibility with the public
- Raising staff awareness and enforcing commitment to departmental environmental policy
- Exploring improvement opportunities
- Establishing the performance baseline for developing an Environmental Management System (EMS)

Conducting an environmental audit is no longer an option but a sound precaution and a proactive measure in today's heavily regulated environment. Indeed, evidence suggests that Environment Audit (EA) has a valuable role to play, encouraging systematic incorporation of environmental perspectives into many aspects of an organisation's overall operation, helping to trigger new awareness and new priorities in policies and practices.

Evolution of Environmental Audit:

Environmental auditing originated in the United States in the 1970s as a way of checking whether a company was complying with a multitude of new environmental laws and regulations. More recently, it is used as an extremely valuable tool for assessing a company's environmental management systems, policy, and equipment. It provides the company with recommendations on how it can improve its environmental management practices, and reduce the impact that a company is having on the environment. In addition, improved environmental practices often save money in the long run.

Environmental audits can be conducted internally by staff of the business concerned, or independently by experts. Unlike financial audits, there is currently no legal requirement for an external audit.

Environmental auditing has been variously defined as: A management tool comprising a systematic, documented, periodic and objective evaluation of the performance of the organisation, management system and processes designed to protect the environment with the aim of: (1) facilitating management control of practices which may have impact on the environment, and (2) assessing compliance with company policies and the systematic examination of the interaction between any business operation and its surrounding. This includes all emissions to air, land and water, legal constraints; the effects on the neighbouring community,

landscape and ecology; and the public's perception of the operating company in the local area.

Many types of audit have been carried out by companies (ERM, 1996, Thompson and Therivel, 1991):

- **Compliance Audit** - the most common type of audit consisting of checks against environmental legislation and company policy;
- **Issues Audit** - an evaluation of how a company's activities relate to an environmental issue or (e.g. global pollution, energy use) or an evaluation of a specific issue (e.g. buildings, supplies);
- **Health and Safety Audit** - an assessment of risks and contingency planning (sometimes merged with environmental auditing because of the interconnected impacts of industrial processes and hazards);
- **Site Audit** - an audit of a particular site to examine actual or potential environmental problems;
- **Corporate Audit** - an audit of the whole company and its policies, structures, procedures and practices;
- **Due Diligence Audit** - an assessment of potential environmental and financial risks and liabilities carried out before a company merger or site acquisition or divestiture (e.g. contaminated land remediation costs);
- **Activity or Operational Audit** - an assessment of activities that may cross company departments or units (e.g. energy or waste management) and
- **Product or Life Cycle Audit** - an analysis of environmental impacts of a product throughout all stages of its design, production, use and disposal, including its reuse and recycling (cradle to grave).

The above have been described as partial environmental audits (Welford and Gouldson, 1993) to distinguish them from the more specific environmental audit and, in particular, the periodic audit that forms a crucial step in environmental management systems (EMS).

In the public sector, two forms of environmental auditing have been defined (LGMB, 1991):

External audit - 'An assessment of the condition of the local environment, usually resulting in a State of the Environment Report (SoE or SOER) and
Internal audit - consisting of two areas:

- **'Policy Impact Assessment** - a review of the activities (objectives, services, practices and policies) of the authority and
- **'Management Audit** - a review of the procedures and structures by which environmental policies are managed by the authority

Environmental Auditing Purpose:

Environmental Auditing is the process of determining whether our operations and practices are in compliance with regulatory requirements, company policies and procedures, and accepted standards. It is a systematic, objective evaluation of facility activities for a finite review period designed to:

- Verify compliance with environmental regulations, internal policies, and accepted practices.
- Evaluate the effectiveness of environmental "management systems" in place, and
- Identify and assess any reasonably foreseeable risks associated with hazardous conditions attributable to our operations and prevent or mitigate such risks.

An effective corporate environmental auditing program increases environmental management effectiveness and comfort with the knowledge that the risks of potential exposure to adverse environmental issues are being addressed.

Goals

Environmental auditing goals should:

- Identify and document facility compliance status. Environmental audits will not only consist of noting differences or shortcomings that may exist at facilities, but will also acknowledge areas of exemplary performance. Further, it will include evaluating patterns of deficiencies that may develop throughout the company or over time.
- Improve overall environmental performance at facilities. Regularly scheduled audits will provide an incentive for permanent resolution of environmental issues at facilities and provide a means to identify and realize continuous improvement at all operations.
- Assist facility management. In addition to verifying a facility's compliance status, audits can aid management in understanding and interpreting current or upcoming regulations or policies. They can also help identify compliance issues and cost-effective solutions as well as assist in identifying employee training needs. Further, the information provided in protocols and checklists developed by the audit group can help facilities better manage their operations.
- Increase environmental awareness throughout the company. The audit program demonstrates senior management's commitment to environmental compliance. The audit program will, by its nature, increase environmental awareness at facilities. Increasing environmental awareness will influence and involve employees at all levels of the organization.
- Identify and assess environmental risks. Audits will assess risks associated with hazards both regulated

and unregulated. They will include proposed actions which can be taken to control, mitigate, or eliminate risks, and evaluate potential material impacts to the Company.

- Optimize Resources. Identification of environmental activities and practices, and investigation into consolidation of resources and technologies results in more efficient and cost effective management strategies.
- Provide assurance to senior management. Environmental audits provide senior management evidence that environmental affairs are being effectively managed, and that the company's exposure, including the exposure of responsible company officials, to compliance related issues and identified hazards are minimized.

The long term goal of the environmental audit program is to provide a basis for assessing and improving management systems and to identify and resolve environmental issues before they become problems, hazards, or risks.

The environment audit must:

- a. be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the competent authority;
- b. Include consultation with the relevant agencies;
- c. Assess the environmental performance of the company and whether it is complying with the relevant requirements in consent conditions, Environment Clearance conditions and relevant mining lease and other statutory requirements (including any strategy, plan or programs required under these approvals);
- d. Review the adequacy of strategies, plans or programs required under these approvals; and if appropriate;
- e. Recommend measures or actions to improve the environmental performance of the company, and/or any strategy, plan or program required under these approvals; and
- f. Be completed within specified time limit of the approval of the audit team.

Corporate Environmental Policy of Coal India Ltd.:

A comprehensive and well-defined "Corporate Environmental Policy -2012" has been framed and issued by CIL, which has been adopted as Corporate Policy by all subsidiary companies.

The Policy Statement says:-

"Coal India Limited affirms its commitment for environment friendly mining with right mitigation of pollution, reclamation of the degraded land, preservation of biodiversity and proper disposal of waste following the best practices including judicious use of the non – renewable energy on the path of continual improvement."

The Objectives of Corporate Environmental Policy-2012 are given below.

- Conduct mining and associated operation in an environmentally responsible manner to comply with applicable laws and other requirements related to environmental aspects. Design projects with due consideration of Sustainable development.
- Prevent pollution of surrounding habitation by continuous monitoring and adopting suitable measures for environment protection.
- Ensure compliance of all applicable Environmental Clearance conditions, Forest Clearance conditions and other statutory conditions issued by regulatory agencies.
- Implement Environment Management Plans in all our mines effectively to mitigate pollutions on air, water and noise, reclamation of degraded land and proper disposal of waste.
- Strive to conserve biodiversity
- Conserve natural resources through recycling of wastes on the principle of REDUCE, RECYCLE and REUSE. Put special thrusts on efficient energy utilization as a measure to reduce carbon footprint.
- Strive for continual improvement in our environmental performances by setting targets, measuring progress and taking corrective action.
- Create environmental awareness among the employees and the local communities through proactive communication and training.

Environmental Compliance/Non-Compliance:

Environmental compliance implies conforming to a rule, laid down under policy, regulations or standard. In the Indian context, environmental compliance for coal industry typically include: — Obtaining licenses like Consent/Clearances from appropriate authority; — Compliance with the conditions laid down in such license; — Compliance with discharge /emission / waste related standards; and — Timely submission of monitoring reports and cess returns. Earlier like all other industries, coal industry also often did not take meeting with environmental compliance seriously. Later on, it was realized that Cost of noncompliance generally is however greater than the cost incurred towards compliance. State Pollution Control Boards (SPCBs) have authority under the Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981 and Environmental (Protection) Rules, 1986 to initiate action against non-compliant industries — Disconnect non-compliant facility's utility connection, — Issue of closure order against the non-compliant facility and /or — Prosecution of the occupier of such errant facility.

Closure of industries not only leads to business interruption but in addition leads to loss of reputation

and reduced confidence of shareholders and stakeholders. Meeting compliance in a consistent and proactive manner is therefore beneficial to the Coal industry.

State Pollution Control Board is the apex authority in the State for upholding environmental protection. SPCB's are mandated to enforce the following major regulations;

- Water (Prevention & Control of Pollution) Act, 1974 and Rules, 1975
- Water (Prevention & Control of Pollution) Cess Act, 1977 and Cess Rules, 1978
- Air (Prevention & Control of Pollution) Act, 1981 and Rules, 1982
- Environmental (Protection) Act, 1986 and Rules, 1986
- Hazardous Waste (Management and Handling) Rules, 1989 [superseded by Hazardous Waste (Management, Handling & Trans-boundary Movement) Rules, 2008, as amended to date]
- Batteries (Management & Handling) Rules 2001
- E-Waste (Management & Handling) Rules 2011

Depending on relative pollution potential, industries are classified (and thus prioritized) into Red, Orange and Green categories. The frequency for inspection of Red, Orange and Green category industry as guided by the Central Pollution Control Board (CPCB) is given in Table 1.

Table 1: Inspection Frequency for Red, Orange and Green category Industries

Type	Large	Medium	Small
Red	Once every 3 months	Once every 3 months	Once a year
Orange	Once a year	Once a year	Once in 3 years
Green	Once in 2 years	Once in 2 years	Once in 5 years

Coal Industry comes under Red category Industry, and State Pollution Control Board Officials visit the industry and take mandatory samples and inspect the facility.

Present Compliances by Indian Coal Industry:

1. Monitoring of Environment Management Plan (EMP) and Environment Clearance (EC) conditions, as approved by Ministry of Environment & Forest (MoEF) is done on regular basis. Six monthly compliance reports for periods April to September are submitted on or before 1st December & October to March are submitted on or before 1st June every year to MoEF.
2. Hazardous waste disposal status (Waste oil, used oil, filter etc) is submitted on six monthly basis for periods Oct to March by 30 th June & April to September by 31st Decemeber every year to State Pollution Control Boards in Form IV (Rule-9(2))- Format for submission of returns regarding disposal of Hazardous Waste. Form 3 (Rule-9(1)- Format for maintaining

- records of Hazardous waste is also submitted on six monthly basis.
3. Compliance of provisions of Batteries (Management & Handling) Rules 2001- Form VIII (form for filling returns for bulk consumers of batteries) & Form IX (form for filling returns by auctioneers of used batteries) to be submitted every six months for periods April to September to be submitted on or before 1st December & October to March to be submitted on or before 1st June every year to state Pollution Control Boards.
 4. Compliance of provisions of E-Waste (Management & Handling) Rules 2011- Form 2(Rule 4(8),5(5) and 9(5)) (form for maintaining records of E-Waste handled/generated) being a bulk consumer of Electronic Waste.
 5. Annual Environmental statement in Form V (under Rule 14 of Environment Protection Act 1986), is submitted to respective State Pollution Control Boards up to 30th September every year in respect of the projects having Environmental Clearance from Ministry of Environment & Forest (MoEF).
 6. Production report to be submitted for previous financial year on 1st April of every year.
 7. Environmental Monitoring on fortnightly basis with respect to ambient air, water and noise quality for all the working mines is carried out as per the Environment (Protection) Amendment Rules, 2000 (Extra-ordinary Notification in the Gazette of India on 25th September, 2000 – Standard for Coal Mines) through Central Mine Planning & Design Institute Limited(CMPDIL).
 4. Often from expenditure statement it is seen that the expenditure on monitoring of Air, Water, Noise etc is more than the expenditure incurred on Air, Water, Noise pollution control actions. The same frequency of monitoring is maintained even though the reports show consistently low figures as compared to permissible quantities on the basis that the same is mandated by law. The frequency should be increased if the consistently low figure for particular pollutant is noticed.
 5. Specific measures to reduce the pollutant level be taken based on monitoring reports. No adverse report is seen on examination of pollution levels reported.
 6. Benchmarking of pollution levels and efforts to reduce the pollution with respect to that level is not noticed and hence should be done and be revised upwards on regular basis.
 7. There is no reward and punishment policy for meeting compliances or not. The only option available in case of noncompliance is the closure of the industry.
 8. Due to less personnel with State Pollution Control Boards, monitoring of industries on regular and frequent basis is not possible to do as mandated for Red category of Industry by Central Pollution Control Board (CPCB) and this leads to slackness in compliance on the part of the industries.
 9. Real time monitoring and reporting systems should be established.
 10. The environment statement format should be revised periodically to incorporate the new changes in existing environmental laws as well as incorporation of new laws.
 11. The resource conservation and resource use efficiency aspect is not dealt in environmental audit as a result there is no consistent data generated nor compared.
 12. Efforts made to increase awareness amongst employees as well as local population should be recorded and monitored and different environmental days should be observed and efforts made to popularize them should be recorded.
 13. The raw material consumption figures do not depict the correct picture as outsourced works are not covered properly. When bulk of the production is done through outsourced means, the submission of data of only departmental consumption of raw materials does not provide any meaningful data and as such does not reflect anything in terms of consumption of raw

All these reports are submitted on the periods as stipulated from time to time.

Observations and suggestions in regard to statutory compliances

1. Environmental statement in form V is only a statement and supporting documentary evidence for its verification is not attached nor demanded.
2. The submission of different formats for different periods do not provide comparable figures for a uniform period like January to December or April to March.
3. There is no mechanism to check whether the reports being submitted are in compliance or non compliance of the statutory provisions.

material vis-à-vis production figures of the mine.

14. The major chunk of pollution occurs during the transportation of coal, outside the active mining area but in the neighborhood area. This is due to ill maintenance of roads, very old tippers/trucks used for coal transportation due to local influential persons involved in the business, burning of coal by local roadside eateries and burning of coal by poor people of the region for cooking food or for keeping them warm during winter season.
15. The water sprinkling is done on the road for dust suppression, continuous & regular dust suppression deteriorates the road condition, which further increases air pollution due to generation of dust. This cycle goes on and it is observed that more often the amount spent on dust suppression (which helps in deteriorating road conditions) is more than the amount spent on improvement of road condition. This needs to be corrected.
16. On energy efficiency front, there is no benchmark of diesel and electricity consumption nor there is industry best mark and hence the data provided in Environment Statement form V remains merely a data and it does not indicate anything. Whether the industry is going in positive or negative direction is not comprehended from the statement.
17. The quantum of pollutant discharged on daily, monthly and annual basis based on the reports of monitoring and its co relation with actual removal of overburden and coal is not done as a result the actual damage caused to the environment on daily basis as well as cumulative basis is never discussed , recorded and compared.
18. The good practices done at one place is never highlighted and hence the benefits that can be drawn from other's experience are lacking and hence the industry benchmarking should be done.
19. In the UK and Ireland emphasis on the concepts of BATNEEC (best available techniques not entailing excessive costs) and BPEO (best practicable environmental option) is done, which emphasize the importance of drawing a balance between economic growth and preservation of the environment. Similar concepts need to be introduced and made as a

part of environmental audit for the purpose of comparison.

20. Supply chain action', where environmental matters become an integral part of the entire industry's supply chain should also be introduced in the environmental audit format.
21. The staff at all levels of the organization should be involved. This can be achieved by creating environmental awareness and training and this will lead to change in the organization's culture. The cleaner and more efficient processes and technology should be adopted which will give a clean public image to the organization. The number of persons trained and the cleaner and more efficient technology application should find a specific place in the format of environmental audit.
22. Environmental management is still a staff function rather than a line function .It has been observed that line managers hinder the environmental staff and are not themselves responsible for the company's environmental performance. This is not right. Line managers should be aware of their environmental obligations and should be fully accountable for the environmental performance of their particular operations.

II. CONCLUSION

The concept of submission of Environmental statement need to be improvised to include the changes occurred in the period since it was introduced as well as to incorporate various aspects, which have been experienced during the course of time. The industry best practice and industry bench mark should also be given proper place so that meaningful conclusions can be drawn and the usefulness of the audit is improved.

III. BIBLIOGRAPHY

- [1]. <http://www.botany.uwc.ac.za/envfacts/facts/auditing.htm>
- [2]. http://smartinvestor.business-standard.com/company/direct-12019-Coal_India_Ltd.htm
- [3]. http://www.fcx.com/sd/pdfs/EnvAudPo_jul07.pdf
- [4]. ERM, 1996, Thompson and Therivel, 1991)
- [5]. Welford, R J, and Gouldson, A P (1993) Environmental Management and Business Strategy Rtman Publishing, London
- [6]. <http://www.snh.org.uk/publications/online/advisorynotes/45/45.htm>
- [7]. <https://www.dlsweb.rmit.edu.au/conenv/envi1128/reading-BharagavaWelford.pdf>
- [8]. Shyam Divan and Armin Rosencranz "Environmental Law & policy in India ", Oxford University Press 2010
- [9]. Corporate Environmental Policy of Coal India Limited