



*Choosing and Designing
Audit of Extractive
Industries from
Environmental/
Sustainability perspective*

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The story of Agaria

The name Agaria comes from the word Agni meaning fire. This tribe inhabiting the central Indian provinces consider themselves as the descendants of Agyasur / Lohasur/Iron-demon. The tradition of iron-making by the Agarias dates back to ancient times.

They collect low quality iron ore nodules or dig a little bit on the surface to collect ore.

They use indigenous and unique techniques for smelting iron and make special low shaft furnaces built out of clay.

The ore is separated using a unique gravity separation process.



There are some other tribes like Asuras, Kharias, Lohars, Cheeroos who inhabit in the forest areas of Central and Eastern India which are rich in iron ore. The tradition of iron-making by these tribes dates back to ancient times. Their technique is particularly unique and the quality of iron produced is also flawless.

As per the tribal philosophy:

1. They are the children of nature and their livelihood is closely interlinked with nature. They always make sure that their mother nature/ habitat is not harmed by human activities.
2. They do not believe in accumulation/parking of wealth. So their production is limited to their need and the need of their neighbours. Mainly weapons for hunting and utensils for daily uses are produced from the processed iron.
3. There is no impact on nature by their activities and nature is sustained.

IS IT POSSIBLE TODAY ?

Since the Industrial Revolution in the 18th century and with the advent of Capitalism, mass production started. Within the next 200 years it had manifested itself into various forms such as Imperialism, Consumerism and Globalisation . They quickly engulfed the entire world and have affected each and every member of nature under the sun.

Simultaneously, the concept of SUSTAINABILITY has been completely downgraded due to a persistent demand for a so-called “development “ under the present leadership of the world.

IDEA OF SUSTAINABILITY :

It is a holistic approach of how we can satisfy our needs today without cutting off the same possibilities for future generations.

SUSTAINABLE DEVELOPMENT means balancing local and global efforts to meet basic human needs without destroying or degrading the natural environment.

“The world has enough for everyone's
need, but not enough for
everyone's greed.”

M.K Gandhi

NATIONALISATION OF COAL MINES IN INDIA

- From the seventies onwards, a series of Acts/Regulations were enacted by the Govt of India which were beneficial to the environment like the Wildlife Protection Act, 1972, Environment Protection Act, 1986 etc.
- From early seventies, many Acts were passed to prevent unscientific mining practices and to improve poor conditions of miners (mainly safety conditions) which had finally led to the nationalization of coal mines in 1973.
- The Act had nationalized 937 mines (226 coking coal and 771 non-coking coal) and the Coal India/CIL was created in November, 1975.

MINING AND PROTESTS

Mining has mostly affected the forest dwellers and farmers in India/ other countries and many of them are tribals, dalits/low castes, backwards and poor.

Mining has destroyed their habitat, livelihood and identity.

Mining has destroyed the environment beyond repair for next many centuries.

So, there have been protests.

We may not be aware of most of the protests because the voice of tribals, dalits/low castes and poor people across the world is not loud. But due to rise of social media from the last decade, their voices now are being heard by the commoners.

The Forest Right Act,2006 in India has prohibited mining in the forest area. But when the Niyamgiri Hill, a great storage of bauxite was given to Vedanta group for exploitation by the Govt of Orissa, the protest of the Niyamgiri dwellers(Dongria and Kutia Kond Tribes) started. It got immense support worldwide. Finally the tribals won the battle and Niyamgiri was exempted from mining. [Rule of Thumb](#)

June, 2020 - The Indian Govt has taken a unilateral decision and approved auction of 41 coalmines for commercial usage to private players in the states of Orissa, Jharkhand and Chattisgarh.

Probable impact :

Several hectares of land would be deforested and thousand of old trees would be cut.

About 30-32 villages would be shifted and close to 20,000 families would be displaced.

Two reserve forests in Chattisgarh would be affected.

The State Govts of Jharkhand and Chattisgarh are against this decision and naturally the mining interest and tribal/peoples' right are on a collision course.

Is this development or forced development ?

DESIGNING AUDIT OF EXTRACTIVE INDUSTRIES (EI) FROM ENVIRONMENTAL/SUSTAINABILITY PERSPECTIVE

1. A country's mineral resources belong to its people

- Extraction of minerals has tremendous environmental, social and economic impact.
- Public scrutiny of how wealth from a country's extractive sector is used and managed is necessary. Also it is necessary to know **to what extent it is harming the environment and what the extractive sector is doing to rectify it.**
- It is also important for the governments to implement laws and policies that reduce the negative effects of EI activities on the environment and to the local communities to a minimum and ensure sustainable development and economic growth.
- In line with ISSAI 12, SAIs need to be able to add value to society and make a difference in the lives of citizens by carrying out environment audits of the EI sector.

2. Understanding Extractive Industries:

In the context of present discussions, I shall limit my presentation on extractive industries mainly to the **petroleum** (oil and gas) and **mining sectors** (coal).

Oil and gas industry structure

The activities in the oil and gas industry are grouped into three main segments: **upstream, midstream and downstream**. Upstream comprises exploration, development and production; midstream covers transportation and storage; and downstream includes manufacturing of products through oil refining, gas processing and petrochemical processes, as well as the selling of these products to the various consumer markets.

After a period of production of 15-25 years, the limits of economical recovery of the hydrocarbons are generally reached and the production structure is dismantled to rehabilitate the area. **When commercial exploitation ends, the decommissioning of production installations starts, which involves the removal of buildings and equipments, the restoration of the site to environmentally-sound conditions, the implementation of measures to encourage site re-vegetation, and the continued monitoring of the site after closure.**

3. Mining industry structure

The **main activities** in the mining process can be classified into **extractive** related, which involves **exploration, development and mining**; **processing** related, which encompass processing or **beneficiation, smelting and refining**, other added value activities; and **transport and storage**.

Mining can be classified in **two types** or extraction methods: **surface mining (open pit or open cast)** and **underground mining**.

When commercial activity reach to an end **decommissioning** and **mine closure activities** are carried out. The time needed to shut a mine varies from two to five years; normally, the bigger and more complex the operation, the longer it takes to close.

It is fundamental for **auditors to understand the mining lifecycle and activities involved in each stage** in order to identify areas where they can conduct audits that would lead to proper management of the mining sector in their respective countries.

4. Impact of Extractive Industries on Environment:

In spite of their potential positive economic impacts, **extractive activities tend to leave a strong environmental footprint that must be addressed**

In the case of oil and gas, improperly planned seismic tests and drilling activities, flaring of excess gas, deforestation from on site operations, oil leakages spill through all the supply chain and accidents affecting the natural life of the area and the performance of other economic activities like fishing or tourism during a long period.

In mining, the most common negative environmental impacts include landscape alteration (erosion, formation of sinkholes), **air, soil and especially water pollution** (groundwater and surface). Mining is a water intensive industry and the sole utilization of this resource could be especially critical in areas where water is scarce or is highly required by other local activities (agriculture, drinking) or ecosystems.

For extractive industries in general, **decommissioning** and closure of mines is another relevant source of negative environmental impact **if not properly managed**.

Governments face the **challenge to minimize and manage the environmental effects** caused by extractive industries. **Policies and environmental regulations and their effective enforcement** are key to encourage companies to adopt the highest standards of environmental protection.

Open cast coal mine



Mine fire



Coal Mining



OCP in operation



Dumper loading



5. Audit of Extractive Industries

Having discussed the various facets of Extractive Industries, the issues which are important for planning & designing the Audit of Extractive Industries from environment/sustainability perspective are discussed below:

- Know the Auditee organizations and their activities well,
- Have a very clear idea of pollution created by their activities and its impact,
- Understand the response of the Govt and the organization to the problem.
- Know the Acts/ Rules etc well,
- Planning (Selection of topic, focusing the audit priorities and determining the methodology)
- Methodology (specific issues and non compliance, field visit, photographs, consultant, survey etc)

6. Selection of Topics

To start with, the audit office piloting the **environmental audit of Extractive Industries** should build a comprehensive **library of information** and construct portfolios on all important topics related to environmental degradation and climate change. **Thrust areas** should be identified **through risk analysis, materiality and visibility**. Another important issue to be kept in mind in the selection of the subject for audit is the need to consider the **holistic impact on the environment** and **to address the accountability process at various levels in the government**. This would call for testing the adequacy of the information and **control system** and the availability of **an efficient evaluation and reporting system** within the government departments and their agencies.

The following issues are also to be seen during selection of the topic :

- intended and achieved overall results;
- availability of audit criteria, especially where there are no statutory requirements;
- feasibility of comparing results with best management practices, and parallel management practices;
- data availability (clear, reliable, relevant and appropriate).

7. Audit Process:

Although every audit project is unique, the audit process is similar for most audit engagements like for compliance, performance or financial audit and normally consists of four stages

Environmental Audit Planning:

Audit planning is vital to the success of the audit undertaken.

The audit plan should have the following inputs:

- description of the environmental issues which would form the focus of the audit;
- description of the entity, its objectives, programmes, environmental commitments and obligations, funding, organizational structure etc,
- preliminary analysis of the programme under audit, progress of implementation, status, performance indicators and other criteria;
- audit objectives, scope, limitations and audit risks, if any;
- composition of the audit team, recourse to external resources and experts where applicable, audit period and schedule for field visits;
- suggested areas for close scrutiny, documents and audit evidence to be checked, audit methodology (including interviews, questionnaires, statistical surveys, taking photographs) to be followed;
- details of previous audits, and evaluations by outside agencies including environmental experts;
- expected outputs of the audit with focus on environmental issues, and;
- reference to international and national/regional laws, regulations and conventions etc.

8. Gathering Background Information:

Some of the sources available for gathering background information about the audit entity for compliance, financial and performance related environment audits are:

- Environmental policy of the audit entity.
- Financial policies relating to the environment governing the audit entity.
- Relevant rules and regulations governing the audit entity which relate to environmental compliance.
- Annual report of the audit entity.
- Administrative and financial delegation of powers of the audit entity.
- Reports of the Internal Audit of the audit entity.
- Commitments given by the audit entity to the government planning agencies, in performance/outcome budgets.
- Media reports.
- Reports of independent evaluation agencies like Non Government Agencies (NGOs).
- Peer review reports.

9. Setting Audit Objectives for Environment Audit:

The objectives of performance audit are manifold and may include ensuring that indicators of environmental related performance (where contained in accountability reports) fairly reflect the performance of the reported entity.

The audit objectives may relate to areas like:

- Existence and adequacy of environment policies / laws /strategies.
- Adequacy of data for evaluating impact on pollution on environment.
- Identifications of risks caused by pollution to health and environment.
- Allocation of responsibility amongst the various stakeholders involved in pollution control.
- Adequacy of monitoring and evaluation of environment laws.
- Adequacy of infrastructure and funding.

10. Setting Audit Criteria for Environment Audit:

Audit criteria help in assessing the performance of the entity with reference to certain laid down standards and performance benchmarks.

Typically, the criteria for compliance audit will be subject-specific, apart from the following general items:

- National Environment Laws, Rules under them and Regulations.
- Policy documents and strategies issued by the Government.
- Notifications issued by the Government and the agencies under them.
- International Conventions and Treaties which have binding force.
- Standards issued by responsible bodies such as those for Environment Impact Assessments, ISO 14001 for Environment Management System, pollution control orders and standards issued by oversight and implementation bodies such as CPCB etc.
- Sanctions and permits issued in respect of the entity by the regulatory bodies concerned.
- EIA reports, consultant's certificates, reviews by independent organizations and NGOs etc.
- Guidelines/ instructions of the State Pollution Control Boards

11. Audit Methodology for conducting environment audit:

Environment Audit is not significantly different from other audits and the audit methodology adopted by the SAI in the ordinary course would embrace environment audits as well.

Interviews, document and file searches, data verification, analysis etc. may be used as part of the methodology, duly supplemented with field audit, standard questionnaires, statistical sampling etc.

Entry and Exit Conferences

Compiling Checklists

Field Visits

The main focus of field visits should be to gather adequate, acceptable and material audit evidence to support the audit findings and conclusions. Audit evidence could be collected through written queries, questionnaires, interviews, photographs, testing of samples etc. Detailed examination of files and documents maintained by the entity in compliance with its own procedures, management systems and internal controls would offer convincing audit evidence.

Sampling: Various sampling techniques like random sampling, stratified random sampling, judgmental sampling, purposive sampling etc. could be used in the audit methodology.

General Issues for Consideration: The global nature of environmental matters must be kept in view in developing the audit methodology.

Environmental impact assessment is complex and auditors should rely on expert assessments in this regard, and provide for the same in the methodology..

Engaging External Experts: Since environmental matters are technical in nature, and may involve divergent views among the experts themselves, their engagement for audit evidence should be designed with extreme care..

12. Selection of Audit Team:

Although environmental audit is similar to other forms of audit, the selection of the audit team requires careful consideration.

13. Audit Reporting:

Audit reports should be complete, precise, accurate and balanced. It should not be judgemental. It should also include constructive and practical recommendations. If drafted and communicated cogently, audit reports could be persuasive and instrumental in inspiring the managements of entities to take corrective actions.

Further, contents of environmental audit reports should be easy to understand and free from vagueness or ambiguity, include information which is supported by complete and relevant audit evidence, and be independent, objective, fair and constructive.

Draft Performance Audit Report on

“Assessment of Environmental Impact due to Mining Activities and its Mitigation in Coal India Limited and its Subsidiaries”

Brief on our PA

- My office audits Coal India(CIL) and its 7 subsidiary PSUs. The natures of coal-fields, pollution and mitigation measures are the same
- We sent 8 audit parties(each having 3 officials)
- Field visit took 5 months(2018-19)
- CIL etc. already had sufficient environment related rules
- They have Environmental Wings with qualified personnel.
- CMPDI (Central Mine Planning and Design Institute Limited) is an exclusive research office having a full fledged environment-laboratory
- We have categorised pollution issues into 3 broad categories, viz. air, water and land. Majority of observation were non-compliance issues
- The report was appreciated at different levels and follow-up actions have been taken

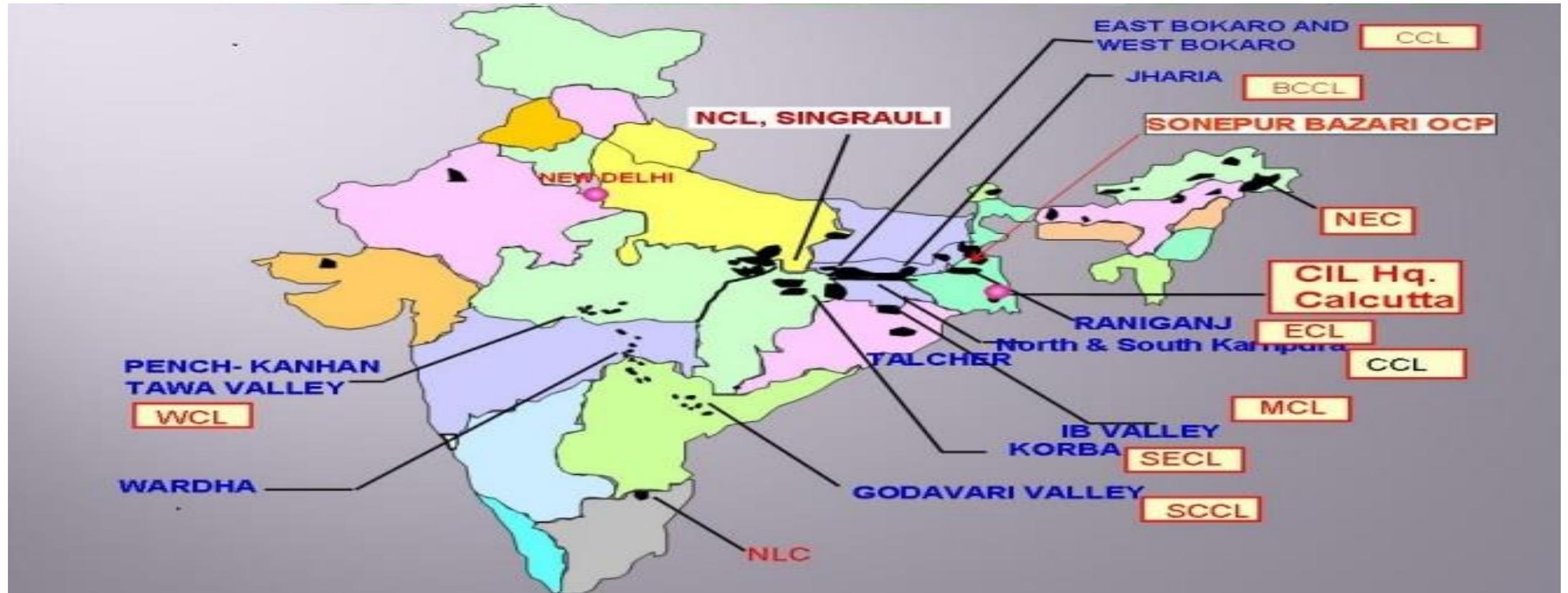
Structure of the Presentation

- Background
- Audit Objectives , Scope and Sample
- Audit Findings:
 - Environment Management System
 - Air, Water Pollution and Land Degradation
 - Adherence to Regulatory Conditions
 - Rehabilitation and Resettlement of Mine Fire
 - Monitoring of Environmental Activities
 - Green Initiatives and Good Practices
 - Recommendations

Background

- Coal, a fossil fuel, is extracted predominantly through open cast mining (OCM) (in India, 95% are OCM) which disfigures the countryside and tends to pollute the atmosphere of the locality.
- The main activities in coal mining are **drilling, blasting, extraction** of coal reserve and **transportation** of coal from mines to railway siding or to washeries.
- Extraction of coal involves serious environmental and social concerns, including **air, noise and water pollution, land degradation** and far reaching consequences.
- **It is therefore imperative that mining is carried out in a wise, socially responsible and environmentally sustainable manner**
- In order to assess the performance of CIL and its Subsidiaries (viz., ECL, MCL, NCL, CCL, BCCL, SECL and WCL) in managing environmental risks, to flag areas of concerns and to make appropriate recommendations, a Performance Audit on “Assessment of Environmental Impact due to Mining Activities and its Mitigation in Coal India Limited and its Subsidiaries” was undertaken.

The major coalfields of India



Source: Energy Statistics 2015, Central Statistics Office, National statistical Organisation, Ministry of Statistics and Programme Implementation

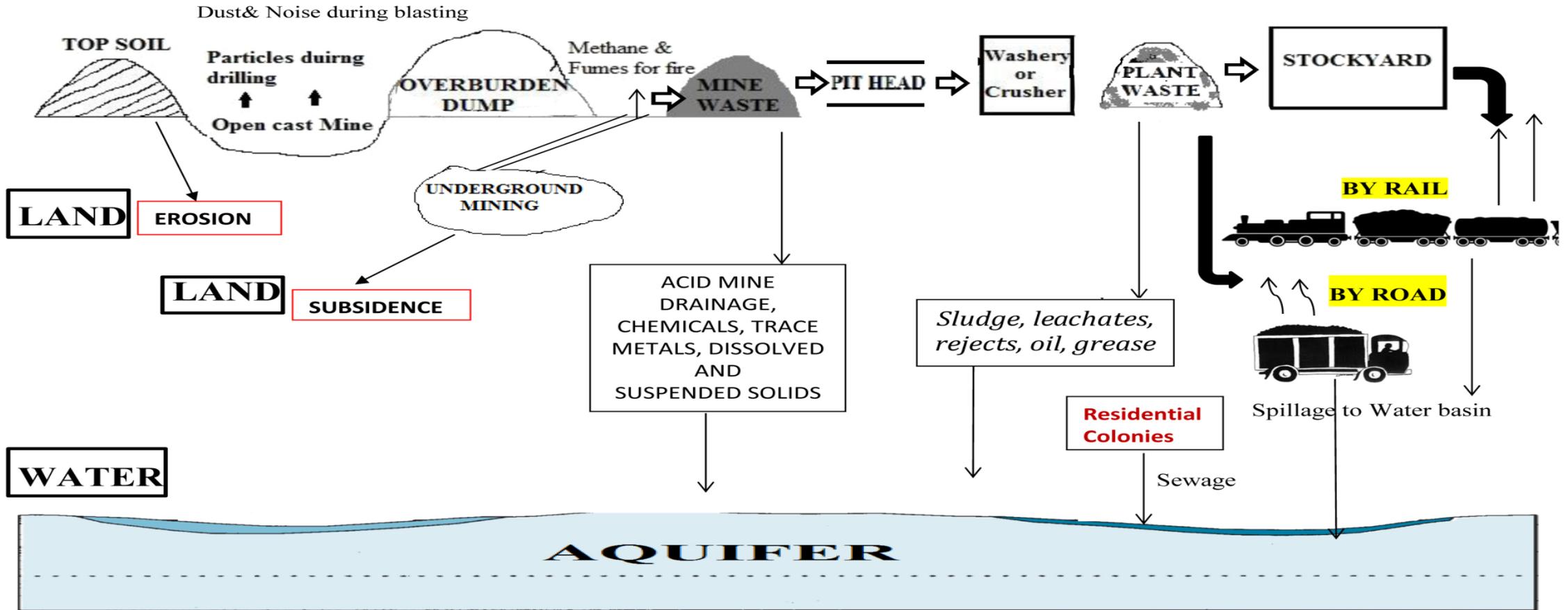
POLLUTION IN COAL MINING

AIR

CO, CO₂, SULPHUR COMPOUNDS & NITROGEN COMPOUNDS & DUST PARTICLES

MINING

TRANSPORTATION



Audit Objectives, Scope and Sample

– Audit Objectives :

- to examine whether CIL / Subsidiaries adhered to the relevant laws, rules and regulations as prescribed for environmental protection under the Environment Protection Act for prevention of pollution;
- to assess the implementation and effectiveness of sustainable development measures taken up by CIL / Subsidiaries for environment protection in the mining area.
- to assess whether adequate monitoring mechanism existed in CIL / Subsidiaries for taking up remedial measures to control environmental degradation.

– Audit Scope:

The Performance Audit was undertaken for the period from 2013-14 to 2017-18 in CIL and its Subsidiaries

– Audit Sample:

Audit selected 41 mines (28 operating mines & 13 closed mines) and 2 washeries out of 500 mines (369 operating mines & 131 closed mines) and 15 washeries on the basis of random sampling. This apart, records of CIL HQ, Subsidiaries' HQs and CMPDIL have been reviewed.

- **Audit Criteria:** The PA was conducted with reference to relevant acts, policies and guidelines on environmental issues.

Environment Management System

- **Non-revision of Corporate Environmental Policy (CEP)**
 - The Corporate Environment Policy (CEP) of CIL was formulated in March 2012. This was revised only in December 2018 after a delay of 20 months though it was due for revision in March 2017.
 - Further, six out of seven coal producing Subsidiaries did not have a Policy approved by their respective Board of Directors as mandated by MoEF&CC.
 - Guidelines containing the responsibility and delegation of powers of different levels in the Environmental wing was not dovetailed by the Subsidiaries as a **Manual** to serve as a guide in the operations in specific mines under their control.

Air Pollution

- **Inadequate/absence of Air Quality Monitoring Stations (AQMS)**
 - According to the EIA – EMP of the mines and as specified in EC, requisite number of AQMS is to be established in core zone and buffer zone of each mine for monitoring air quality. Out of the 28 sample (operating) mines and 2 washeries, Audit observed that in 12 mines/washerries of the three Subsidiaries, against 96 monitoring stations, only 58 monitoring stations (60 per cent) were established, thereby rendering the process of air quality monitoring ineffective.
- **Inordinate delay in installation of Continuous Ambient Air Quality Monitoring Stations (CAAQMS)**
 - As per SPCB’s directives, CAAQMS be installed to facilitate online monitoring of ambient air quality. Out of 28 operating mines taken up for detailed scrutiny, 12 mines of four Subsidiaries did not comply with these directives.
- **Supply of coal to power houses without beneficiation**
 - MoEF&CC mandated (January 2014) that coal based thermal power plants be supplied with coal having ash content not exceeding 34 *per cent*.
 - The average ash content in the coal extracted by MCL in the sampled mines ranged between 40.1 *per cent* and 43.8 *per cent*. Although MCL contemplated setting of four washeries as early as in March 2008 for supply of beneficiated coal to thermal plants, these have not been commissioned so far (April 2019).

Air Pollution

- **Deviations from the prescribed standards**

- The National Ambient Air Quality Standards, 2009 (NAAQS) notified by MoEF&CC in November 2009 mandated monitoring of PM₁₀ and PM_{2.5} on annual and 24 hours basis. Routine Environment Monitoring reports of three Subsidiaries (BCCL, ECL & WCL) for the period 2013-18 showed that the concentration of PM₁₀ and PM_{2.5} in air exceeded the levels prescribed in NAAQS in six mines.
- The Ministry assured (May 2019) to revisit the existing CIL guidelines regarding implementation of NAAQS 2009 in totality, for core as well as buffer zone.

- **Non-adherence of CIL Guidelines**

- The transportation by road generates a lot of air pollutants (dust) for which CIL guidelines (March 2014), mandated that dust is to be controlled at the source with necessary measures. Joint inspection in 17 out of the 28 operating mines revealed non-adherence of guidelines in respect of use of covered conveyor belt, use of silo and dust free loading of coal into wagon, use of sprinkler/mist sprayers, mechanical brooming, plantation at railway siding/stockyard.

Air Pollution

Audit observed the following which led to delay in control of dust pollution:

- Delay in commissioning of rapid loading system at Piparwar OCM of CCL.
- Delay in firming up tender for capacity augmentation of CHP at Jayant_OCP of NCL.
- Idle Infrastructural facilities of Rs.742.42 crore at SECL, MCL & NCL towards commissioning of Silo/railway siding.
- The Ministry stated (May 2019) that the progress of projects was being monitored by them on regular basis and necessary steps would be taken to complete the pending projects expeditiously

Conveyor belt



Pic. 01: Un-covered conveyor belt at CHP in Lingraj Mine of MCL



Pic. 02: Covered conveyor belt at CHP in Mungoli mine of WCL

Water Sprinkler



Pic. 03: Jarangdih Railway siding of CCL without fixed sprinklers



Pic. 04: Ghugus Railway siding of WCL with fixed sprinklers

Washeries



Pic. 08: Existence of weeds in HEMM washing facility at Dabor, ECL



Pic. 09: Choked drains and chambers of HEMM washing facility at Sonapur Bazari, ECL, resulting in overflow of sludge

Fog Canon



Water sprinklers



Water Pollution

- **Excess level of pollutants**
 - Bureau of Indian Standards (BIS) prescribed (May 2012) maximum limit of water pollutants in mine water which after treatment is subsequently used for drinking and other purposes.
 - Out of 28 mines selected for audit scrutiny, in eight mines across three Subsidiaries, *viz.*, BCCL (one), CCL (four) and MCL (three) the pollutants exceeded the prescribed limits.
- **Zero discharge of industrial waste water**
 - In MCL, during 2013-18, 62 lakh KL of untreated water was discharged to nearby water bodies by Lakhanpur (2.95 lakh KL) and Basundhara (W) mines (59.05 lakh KL) of MCL thereby contaminating ground water.
- **Treatment of acidic mine water**
 - For Block-B expansion project (5.47 MTPA) of NCL, MoEF&CC stipulated (August 2014) that acidic mine water be treated and the progress thereof be intimated. NCL engaged (October 2014) CMPDIL for evaluation of the impact of acidity. CMPDIL recommended (March 2017) utilization of the OB materials from the dumps for filling up the mine pits in order to prevent the pyritic material from getting exposed to oxygen and moisture thereby preventing the formation of Acid Mine Drainage. However, no action was taken on CMPDIL recommendations.
- **Discharge of mine water without treatment**
 - MCL failed to install mine water treatment plant in its mines and discharged 51.10 lakh KL of mine water as polluted waste into its natural surrounding.

Water Pollution

- **Shortcomings in Effluent Management System & STP**

- Poor maintenance and under utilisation of Heavy Earth Moving Machinery (HEMM) washing facility was found in the workshops of ECL.
- Non-installation of Sewage Treatment Plant was found in some of the colonies of coal subsidiaries (CCL, ECL, MCL,NCL,SECL,WCL).

- **Pollution to water bodies**

- Audit observed that due to absence of mechanical brooming / industrial cleaner in Piparwar OCM, the spillage from overloaded trucks / dumpers accumulated along the sides of the bridge of Safi River. As the spillage was not cleaned periodically, these eventually drained into the river, thereby contaminating the river water.
- Further, the rejects of Kathara washery of CCL was contaminating Damodar River.

- **Dumping of OB in river bank without maintaining minimum distance**

- The above resulted in contamination of Khudia river water in BCCL. BCCL stated that action was on hand for construction of toe wall/ stone pitching.

- **Use of ground water without obtaining NOC**

- CCL, SECL and BCCL continued to use ground water for their mining operations without obtaining NOC from Central Ground Water Authority.

Spillage on river and riverbed



Land Management

- **Ineffective management of Top Soil**

- EC mandates that the top soil should be stacked properly with proper slopes at earmarked site(s) with adequate measure and should be used for reclamation and rehabilitation of reclaimed areas.
- Out of 23 OC/mixed mines selected for detailed scrutiny, in 13 mines across five Subsidiaries, though topsoil was stacked in the earmarked area, basic records of topsoil indicating the quantity and areas of stacking were not maintained.
- As at the end of March 2018, in three mines of WCL although 75.30 lakh cum of topsoil remained unutilized since 2013-14,
- Out of 9.69 lakh cum of topsoil generated during 2013-18 by three mines of NCL (Nigahi, Jayant and Block B) top soil actually used was 5.79 lakh cum (60 *per cent*), thereby exposing its quality to deteriorate.

Land Management

- **Non-adherence to norms relating to Overburden (OB) dumps**
 - The above resulted in a fatal accident where the OB slid down in Rajmahal OCP of ECL in December 2016, claiming 23 lives of workmen besides loss of expensive equipments and consequent suspension of operations in that patch by DGMS.
- **Inadequate biological reclamation**
 - Biological reclamation aims at stabilisation of OB dumps against erosion and mitigation of air and noise pollution by the process of plantation/ afforestation of mined out areas.
 - ECL, MCL and NCL failed to achieve required targets fixed for biological reclamation.
- **Deviation from stipulations in EIA-EMP regarding plantation**
 - As per EC, mix of forest with local species were to be developed as part of biological reclamation activity. However, the same was not followed in mines of CCL, WCL and ECL.

Overburden dump



Pic. 10: OB dumps without Plantation at Kathara OCP of CCL



Pic. 11: Plantation on OB dump at Jayant OCP of NCL

Adherence to Regulatory Conditions

- **Mine Closure Status Report :**

- On completion of extraction of mine, it needs to be closed after following certain norms like preparation of Mine Closure Plan/Report. Audit found that Mine Closure Status Report (MCSR) for 35 old mines of ECL closed prior to August 2009 was not prepared.

- **Use of Fly Ash for filling up mine voids**

- Different practices are followed in different subsidiaries towards use of fly ash for filling mine voids. While MCL allowed fly ash dumping in their mine voids, MoEF&CC imposed (January 2015) restriction on fly ash utilization in the mine voids of ECL. The Ministry stated (May 2019) that a uniform policy would be adopted based on the recommendations of NITI Aayog.

- **Production in excess of quantities permitted in CTO/ CTE/ Mining Plan: Audit observed:**

- ECL's Sonapur Bazari produced 8.93 MT coal during 2016-17 against 8 MTPA allowed in Consent to Operate (CTO).
- Between April 2013 and June 2017, OSPCB levied penalty of Rs. 6.57 crore on MCL for producing coal in excess of limit cited in Consent to Establish (CTE). Under MMDR Act, Deputy Director of Mines, Odisha levied a penalty of Rs 50.97 crore on MCL for mining 3.728 MT of coal against 3 MTPA mining plan of Basundhara (W).

- **Mines in operation without EC, CTE and CTO**

- In March 2018, BCCL was operating 4 mines without EC, 2 mines without CTO and 3 washeries without EC.
- Similarly, CCL was operating 2 mines without EC, 1 mine without CTE and 4 mines without CTO.
- The Subsidiaries agreed to initiate corrective actions.

Adherence to Regulatory Conditions & Rehabilitation and Resettlement for Mine Fire

- **Infructuous expenditure**
- A proposal which was approved (March 1988) by the BOD of CCL for Hurilong UG coal project, was rejected (August 1998) by MoEF on the plea that the location was in close proximity to the Palamau tiger reserve. Yet, CCL, while following up (August 2007) the matter with MoEF&CC, acquired 6.58 acre non forest land and constructed service building and other infrastructures, at a cost of ₹ 2.98 crore. Subsequent proposal on the above was also rejected (October 2007) by MoEF&CC and hence the expenditure of ₹ 2.98 crore was rendered infructuous.
- **Mine Fire at Jharia**
- Against 45 identified fire projects under the Jharia Master Plan for resettlement / rehabilitation, firefighting activities were commenced only in 25 projects.
- Neither did BCCL have the expertise to assess the extent of underground fire nor did it avail of the services of experts. National Remote Sensing Centre reported that the quantum of surface fire which covered an area of 2.018 sq. km in 2014, expanded to 3.28 square km in 2018, thereby endangering the lives of the people residing in and around the fire area besides impacting the environment adversely.

Monitoring of Environmental Activities

- **Lack of rationalisation in deployment of manpower**
 - There is no consistency among CIL and its Subsidiaries for determining sanctioned strength vis-à-vis deployment of environment executives in their mines and HQs.
 - The deployment of Executives in CIL HQ was in excess and ranged between 20 *per cent* and 120 *per cent* of the sanctioned strength, while the mines under CIL always faced shortage during 2013-18.
 - Similarly, the subsidiaries also failed to assess and fix their manpower rationally.
- **Project monitoring not found uniform and effective**
 - MoEF&CC directed the Subsidiaries to have well laid down system of reporting. We found that while the quality parameters relating to air and water were being monitored on fortnightly basis, the reports were prepared by CMPDIL and reported to the Subsidiaries on quarterly basis, thereby offering no scope for initiating remedial measures on the basis of adverse quarterly readings recorded.
 - Third party audit of environment department was not conducted for evaluation of its environmental activities.
 - Several good practices which were in vogue in some Subsidiaries were not disseminated for adoption by the other Subsidiaries.

Green Initiatives and Good Practices

- In line with the mission set by GoI, CIL intended to develop 1000MW solar power project in a phased manner, which envisaged savings in energy charges of Rs. 55.50 crore annually. For that CIL executed (October 2014) MoU with Solar Energy Corporation of India (SECI) for the development of 250 MW solar power project in the first phase.
- CIL paid Rs. 7.44 crore to SECI upto December 2015 without receiving any service.
- However, CIL failed to implement the project till date.
- Audit also observed that CIL and its Subsidiaries have undertaken considerable [eco-restoration](#) works in some mines/nearby places.

Eco Park in the closed mine



Garden in closed mine



Eco Park



Garden in the closed mine



Recommendations

We recommended that:

- The companies under coal sector may put in place an Environment Policy duly approved by their respective BoD as mandated by MoEF&CC.
- The Subsidiaries may adopt two pronged strategy for pollution control. While expediting the process of completion of capital works relating to pollution control measures, plantation works may be taken up aggressively for green cover as envisaged for maintaining ecological balance in and around the mines.
- CIL should frame uniform and scientific policy towards use of fly ash in the mines, ensuring environmental sustainability.
- Corporate Social Responsibility (CSR) expenses may be dovetailed to ensure sustainable community development around specific mines as mandated under EC so as to avoid lopsided development.

Recommendations

- Remedial actions for mitigation and arresting the adverse impact of subsidence and fire at Jharia Coalfields on the environment may be expedited.
- The implementation of solar power project may be put on fast track so that the environmental benefits fructify as envisaged.
- The manpower in the Environment Department of CIL and Subsidiaries may also be rationalised and Environmental Manual be formulated to serve as a guide in the operations in specific mines under their control.
- The monitoring mechanism in the Subsidiaries may be strengthened by streamlining the existing reporting process for maintaining neutrality and to ensure proper checks and balances in the system of compliance mechanism. The oversight role of CIL be directed to ensure compliance to prescribed environmental standards.
- Deficiencies observed in mitigation of environmental pollution were based on audit of sample mines which may be reviewed in other mines to ensure compliance of environmental rules and regulations.

THANK YOU