

Background Note for Standing Committee on Coal, Mines and Steel

Point No. (x) Compliance of Environment Norms by Coal/Lignite Companies

The operations of Coal mines are governed by the Mines Act-1952, Mines Rules-1955, Coal Mines Regulations-2017, Colliery Control Order-2000 and related guidelines, Mines Vocational Training Rules-1966, Mines Rescue Rules-1985.

Regarding the Environmental protection during coal mining, the operations are covered under Environment (Protection) Act & Rules-1986, EIA Notification-2006. Further following act and rules relating protection of Environment are also applicable to coal mines:-

1. Indian Forest Act, 1927;
2. Forest Conservation Act, 1980;
3. Forest Conservation Rules,2003;
4. Water (Prevention & Control of Pollution) Act,1974;
5. Water (Prevention & Control of Pollution) Rules,1975;
6. Air(Prevention & Control of Pollution) Act,1981;
7. Air(Prevention & Control of Pollution) Rules,1982;
8. Hazardous Waste & Other Wastes (Management & Trans boundary Movement) Rules,2016;
9. Environment (Protection) Amendment Rules, 2000;
10. Solid Waste Management Rules, 2016;
11. Plastic Waste Management Rules, 2016 & Amendments, 2018;
12. E-Waste Management Rules, 2016;
13. Compensatory Afforestation Fund Rules, 2018;
14. Construction & Demolition Waste Management Rules, 2016

In Coal India Limited (CIL) the Environmental norms are compiled in the following ways:-

1. For opening new mine/project prior Environmental Clearance (EC) is secured from Ministry of Environment, Forests & Climate Change

- (MoEF&CC) under Environment (Protection) Act & Rules, 1986 and EIA Notification, 2006 and subsequent amendments.
2. In compliance of the Forest Conservation Act, 1980, prior Forestry Clearance is also secured from MoEF&CC, in case of projects involving forest land.
 3. In case of Expansion Projects (for enhancement in Production Capacity and / or land area) prior Environmental Clearance is also secured from MoEF&CC under Environment (Protection) Act & Rules, 1986 and EIA Notification, 2006 and subsequent amendments.
 4. After receipt of EC, Consent to Establish (CTE) and Consent to Operate (CTO) are also secured from respective State Pollution Control Board under Air (Prevention & Control of Pollution) Act,1981 and Water (Prevention & Control of Pollution) Act,1974;
 5. During implementation of the project, Six-monthly Environmental Compliance Report against the stipulated EC conditions are submitted to MoEF&CC.
 6. In compliance of the EC/ CTE/ CTO conditions, regular environmental monitoring with respect to ambient air quality, effluent quality, noise level monitoring and ground water (both levels and quality) are monitored and reports are submitted to MoEF&CC / State Pollution Control Boards (SPCBs) / Central Ground Water Board (CGWB).
 7. In compliance of the statute, Annual Environmental (Audit) Statement for the preceding financial year for each operating mine is submitted to respective SPCB on or before 30th September every year.
 8. In compliance of EC and Consent conditions, various pollution control measures are undertaken which are regularly augmented / strengthened as detailed below :-

Air Pollution Control Measures

- Coal companies are deploying modern equipment having environment friendly features, like Surface Miner in coal, which eliminates the drilling, blasting and crushing operations in coal and hence, in turn, obviates pollution caused due to these operations. In an effort to introduce blasting free clean

coal technology in underground mines Continuous miner are being deployed in UG mines to minimize blasting vibration. Similarly, High Wall mining is also introduced for blast less coal mining. More than 52% of coal produced in OC mines is through Surface miners and more than 34% of coal produced in UG mines is through Continuous miners in FY 2021-22. CIL has also planned to augment coal production from underground mines by commissioning additional 39 Continuous Miners, 4 Power Support long Wall (PSLW) and 4 High Wall projects by 2025-26.

- **First Mile Connectivity (FMC):** CIL has taken steps to upgrade the mechanized coal transportation and loading system under 'First Mile Connectivity' projects. In FY 2019-20, CIL has taken up new 35 (thirty-five) First Mile Connectivity (FMC) Projects of 414.5 MTPA capacity at an estimated capital of about Rs 10,750 Cr and scheduled to be commissioned by FY2023-24. These 35 FMC Projects are in addition to the already existing First Mile Connectivity (FMC) capacity of 151 Mty. Out of these 35 FMC Projects, 6 Projects of 82 MTPA capacity has already been commissioned. With commissioning of all these 35 FMC Projects, CIL shall have a Rapid Loading Capacity of 555 MTY for loading into Railway wagons, by FY2024.
- Presently CAAQMS have been installed in 65 locations in CIL to monitor the pollution load, additional 38 are under process for procurement / installation.
- The dust is controlled at source by installation of fixed sprinklers at CHPs, coal stock yards, weighbridges and along transportation roads. In major CHPs, fixed sprinklers have been provided at the transfer points and bunkers. CIL has installed about 5,682 nos. of fixed sprinklers in its mining areas. Additionally, 162 fog cannons have also been installed in major opencast mines of CIL.
- Mobile water sprinkler are also deployed along the haul roads. CIL has deployed 850 mobile water sprinkler tankers in its large open cast mines.
- Effective plantation in the mine lease area has been done to arrest the propagation and dispersion of dust significantly.
- Coal companies are having drills fitted with wet drilling and dust extractors in order to control generation of dust.

- Quantum of coal transported by conveyors to siding is being continuously increased to minimise generation of dust due to road transportation.
- Controlled blasting techniques with proper delay detonators and explosives are utilized for reduction of dust generation and ground vibration during blasting operations.
- The quality of ambient air in and around the mine is monitored every fortnight as per Environment (Protection) Amendment Rule.
- Roads are black-topped, coal carrying trucks are optimally loaded and covered with tarpaulin.
- Tree plantation:
 - i. Plantation on inactive OB Dumps is done to minimize soil erosion;
 - ii. Tree Plantation is done around the source of air pollution like mine, infrastructure and roads to reduce air pollution;
 - iii. Green belt has been provided around the mine as well as residential colony for noise attenuation;

Keeping above objectives in view, extensive tree plantation programme is undertaken every year by the coal companies. Avenue plantation, plantation on the OB dumps, plantation around mines, residential colonies, and available land is undertaken in existing as well as new projects.

Water Pollution Control Measures

- Garland drains around mine have been constructed to collect runoff water and siltation ponds for silt collection.
- Mine effluent are treated in settling tanks before discharging /re-use which is used in residential colonies, adjoining villages, industrial purposes & irrigation.
- In OC mines, 123 Effluent treatment plants (ETP) have been commissioned for treatment of effluents.
- In colonies, 45 Sewage treatment plants (STP) have been commissioned for treatment domestic sewage.
- Water re-circulation system has been implemented in washeries to achieve zero discharge of effluents.

- Sumps of mines are rainwater harvesting structures and help in ground water recharge. Apart from this, commissioned 440 rain water harvesting projects in CIL.

Noise Pollution Control Measures:

- Proper maintenance of equipment are done to minimize vibration.
- Green belt around the mine and residential area has been created to minimize the impact.
- Controlled Blasting is being practiced which substantially reduces the noise pollution.
- Use of blasting free technology, i.e. Surface Miner, Continuous Miner & High Wall mining etc are being used and continuously being promoted.
- Ear Muff or Ear Plugs are provided to Workers to mitigate the adverse impact of noise pollution on health of workers.

Land Reclamation

- For reclamation, plantation in the mining areas covering the solid waste as well as the reclaimed land is carried out through State Forest Development Corporations as per the provisions made in the approved EIA/EMPs. The density of plantation is 2.500 sapling per ha. It may be worthwhile to mention here that for every 1 ha of forest land diverted for coal mining projects, about 2.5 ha of afforestation has been developed in the mine area.
- CIL has planted more than 104 lakh of saplings over an area of more than 4391 Ha in inside mine lease area and around 10.82 lakh saplings over an area of more than 808 Ha in outside mine lease area during last five years i.e. from FY 2017-18 to FY 2021-22. CIL & its Subsidiaries have planned to carry out plantation over about 6,800 Ha. for 5 years (i.e. from 2021-2026).
- For FY22-23 as on 15.11.2022, CIL undertook plantation of 29.30 Lakh saplings over 1526 Ha against target of 1510 Ha.
- Regular monitoring of land reclamation is also carried out through remote sensing technique (Satellite imagery). In case of Major OC mines (with excavation more than 5 MM³) the frequency of monitoring is annual and for

other mines the monitoring is carried out once in 3 years. In addition, monitoring of Coalfield wise vegetation cover is also done once in 3 years.

- Study during 2021-22 shows that 76 major OCPs have 62.53% area under reclamation and active mining area is only 37.47 % of the total excavated area.
- On comparing the status of land reclamation carried out in year 2020-21 with respect to year 2021-2022 in the major 76 Opencast projects of different subsidiaries of CIL, it is evident from the analysis of satellite data that area under land reclamation has increased from 173.95 Km² (Yr. 2020-21) to 189.25 Km² (Yr. 2021-22), which includes both area under plantation and area under backfilling. This increase of 15.30 Km² area of land reclamation in last one year is the result of the efforts made by CIL's subsidiary companies towards land reclamation.

Waste Management:

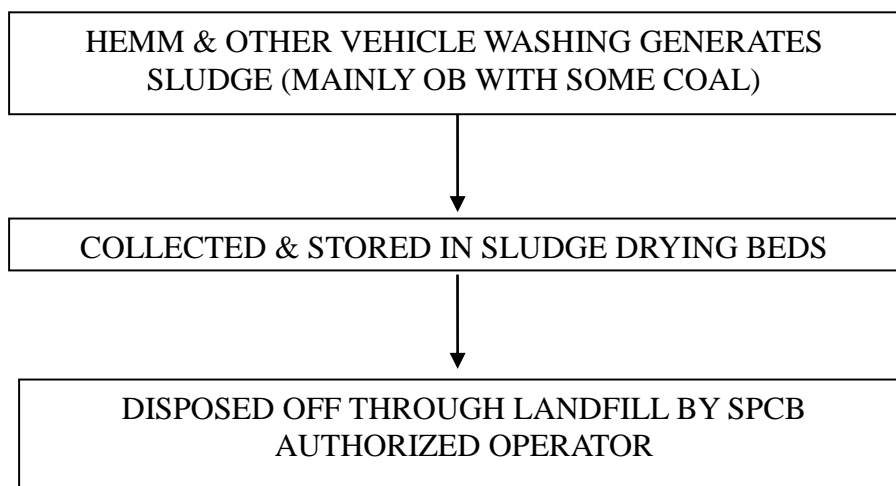
(a) **Hazardous Waste Management:** In compliance of Hazardous & Other Waste (Management & Trans boundary Movement) Rules, 2016 Authorization from respective SPCBs is taken for disposal of Hazardous Waste. Regarding, the hazardous waste, it is generated in Workshops in case of Opencast mines which are disposed off as per the provision of extant Rules.

There are two types of Hazardous Waste generated during mining operations –

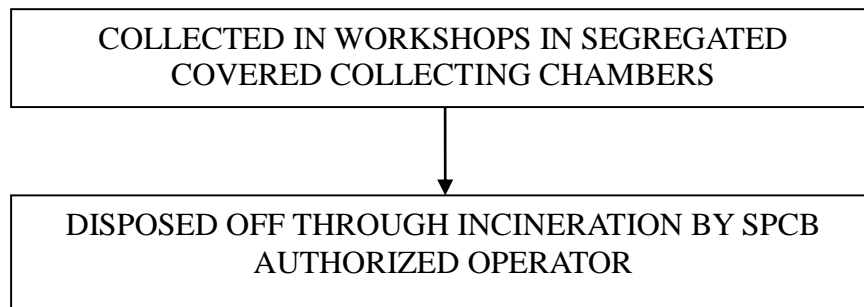
- ❖ Sludge generated from Effluent Treatment Plant (ETP) in OC Mines
- ❖ Miscellaneous wastes viz. hose pipes, oil filters, cotton waste, etc.

The process of disposal of Hazardous waste is mentioned below:

ETP SLUDGE



MISCELLANEOUS WASTES i.e. HOSE PIPES, OIL FILTERS, COTTON WASTE, etc.



(b) **Solid Waste Management:** The Solid Waste Management Rules, 2016 has been framed in suppression Municipal Solid Waste Rules (M&H), 2000.

- These rules shall apply to every urban local body, all statutory towns, outgrowths in urban agglomerations as declared by the Registrar General & Census Commissioner of India, notified areas / notified industrial townships, notified area committees, area under Indian railways, defense cantonments, special economic zones in the country and every waste generator.
- In Opencast mines, the solid waste is generated in the form of overburden lying above the coal seam for extraction of coal. The overburden consists of rock (like sandstone & shale) & soil. This is non – toxic and easily weatherable.
- The overburden so generated is disposed off within the mine lease area as per approved Mining Plans/Project Reports within the provisions of Coal Mines Regulation – 2017, M&M(D&R) Act – 1957 etc. and either externally and/or internally. In case the waste is disposed off externally, dump sites are created at earmarked locations on a tiered pattern of 15-30 m each. Subsequently, the dumps are technically and biologically reclaimed.
- Plantation in the mining areas covering the solid waste as well as the reclaimed land is carried out through State Forest Development Corporations as per the provisions made in the approved EIA/EMPs. The density of plantation is about 2,500 sapling per ha.

(c) **Plastic Waste:** Plastic Waste Management Rules, 2016 & Amendment Rules, 2018

- “Plastic Waste” means any plastic discarded after use or after their intended use is over.
- Therefore, to give thrust on plastic waste minimization, source segregation, recycling, involving waste pickers, recyclers and waste processors in collection of plastic waste fraction either from households or any other source of its generation or intermediate material recovery facility and adopt polluter’s pay principle for the sustainability of the waste management system, the Central Government has framed these rules applicable to every waste generator, local body, Gram Panchayat, manufacturer, Importers and producer.
- Regarding plastic utilization or waste generation at townships/colonies/residential units, the segregation, collection, storage, transportation, processing and disposal of the plastic waste is done through local body / Gram Panchayat.

(d) **E-Waste : E-Waste (Management) Rules, 2016**

- E-waste means electrical and electronic equipment, whole or in part discarded as waste by the consumer or bulk consumer as well as rejects from manufacturing, refurbishment and repair processes
- These rules shall apply to every manufacturer, producer, consumer, bulk consumer, collection centres, dealers, e-retailer, refurbisher, dismantler and recycler involved in manufacture, sale, transfer, purchase, collection, storage and processing of e-waste or electrical and electronic equipment listed in Schedule I, including their components, consumables, parts and spares which make the product operational
- CIL is committed to:
 - i. Ensure environmentally sound disposal /management of electronic & electrical waste.

- ii. Abide by major applicable Legislations, Codes, Standards and requirements for effective management of E waste and its procedures as notified in the E-Waste (management) Rule 2016 & its amendments.
- iii. Take all requisite action to identify and segregation of all (Mentioned in Schedule - I) E-Waste.
- iv. Take all necessary actions to ensure safe storage of e waste.
- v. Maintain Mandatory records relevant to the E- waste generated / handled and channelized in common format and make also available such records for scrutiny by concerned Authorities/Agencies/SPCB/CPCB.
- vi. E waste once identified should be disposed within 180 days through, preferably govt. authorized agencies.
- E-Waste disposal is a part of Uniform Policy for disposal of scrap in CIL.

(e) Construction Waste & Demolition Waste Management Rules, 2016

- The rules shall apply to every waste resulting from construction, re-modeling, repair and demolition of any civil structure of individual or organization or authority who generates construction and demolition waste such as building materials, debris, rubble.
- At the end of the mine life, as part of final mine closure activity, waste is generated during dismantling of buildings/infrastructure (if any) which is collected, stacked separately within the mine lease area and the debris & rubble is utilized for landfilling or backfilling in the low-lying areas. After leveling the cleared land, plantation over that area is undertaken.

Promoting Renewable

In order to minimize the carbon footprints of mining, CIL is keen on promoting renewables. CIL is going for both roof top solar and ground mounted solar projects. It has also been envisaged to develop solar parks in some of the reclaimed mining areas. CIL has already installed 11.967 MW of solar power plants, of which 2 MW of is ground mounted and 9.967 MW rooftop plants. CIL has programmed to install 3,000 MW of solar power projects by 2023-24 which will create a CO2 offset potential of 3.936 million Tonne per year.

Energy Efficiency measures

Efficient use of energy resources and their conservation assume tremendous significance as one unit of energy saved at the consumption level reduces the need for fresh capacity creation by 2 times to 2.5 times. Further, such saving through efficient use of energy can be achieved at less than one-fifth the cost of fresh capacity creation. Most importantly, energy conservation also translates into reduction of carbon footprint.

CIL has signed MOU with EESL to implement Energy Efficiency Programs at CIL and Subsidiaries. This shall cover Building Energy Efficiency Projects (BEEP), Replacement of old fans, ACs and conventional light fittings, motors, adoption of e-vehicle, installation of distributed and rooftop solar projects.

Achievement for 2022-23 till 31.10.2022

PSU	Energy Conservation & Efficiency Measures							
	LED Lights	Energy Efficient AC	Super Fan	E-Vehicle	Efficient Water Heaters	Energy Efficient Motors for Pumps	Auto-timer in Streetlights	Capacitor Bank
	Nos.	Nos.	Nos.	Nos.	Nos.	Nos.	Nos.	
CIL	76,385	622	13,565	17	148	100	746	26,030 kVAR

Compensatory Afforestation Fund Rules, 2018:

- Against the diversion of the forest land required for the mining project, compensatory levies are being deposited in the CAMPA (Compensatory Afforestation Fund Management and Planning Authority) and with State Forest Departments.
- Subsidiaries of CIL have deposited more than Rs. 585.43 crores towards CA & NPV payment in Ad-hoc CAMPA account against forest land diverted for non-forestry purpose during last three years i.e. from 2019-20 to 2021-22.

Mine Closure Guidelines 2008, 2013 & 2020

Mine closure plan is an integral part of the project report for Coal mines. CIL's goal is to achieve its coal production target sustainably and ensure land usage for future

generations after final closure of the mine. Mine closure guidelines have been issued by MoC in 2008 and subsequently revised in 2013 and 2020.

As on date, Rs. 1903.96 Crore has been released from Escrow fund for progressive and final mine closure plan for 283 proposals. In 2022-23, till Oct-22, Rs20.38 Crore has been released by CCO from escrow fund for 20 proposals.

Creating sustainable Post Mining land Use

CIL is committed to plan sustainable post mining land use in such a manner that it does not become liability but a source of income generation to the local community. The post mining land usage are planned giving due consideration of surrounding drainage pattern and landscapes. The forest areas are developed into good forests during post mining, forest density even richer than the original forests in some of the cases. The selection of tree species is carried out in consultation with local forest department officials.

MoU with Expert Agencies

The coal mining environmental issues are complex one and requires multi-disciplinary approach to address the same. It is observed that no single agency in India can claim to have the level of expertise and capacity to handle the environmental issues in an effective manner. In light of the above, CIL is having MoU with expert agencies of repute like NEERI, ICFRE etc. to assist in taking up various specific assignment of coal sector, research & development and capacity building of CIL executives in various emerging areas of environmental management.

Third party evaluation of Compliance of EC Conditions

In order to make assessment of environmental compliance being undertaken by subsidiaries of CIL, third party evaluation of compliance conditions has been entrusted to Indian Council of Forest Research and Education, Dehradun. In the first phase, 20 opencast mines spanning across all the subsidiaries of CIL were selected for this purpose and ICFRE has conducted the audit for evaluation of EC Compliance.

Assessment of change in carbon footprint on construction and operationalization of Tori - Shivpur Railway Line in CCL

The issue of global warming is indeed a serious global concern. In the current scenario greenhouse gases play a crucial role over increment of average temperature of our earth day by day. CIL had engaged CSIR-NEERI for estimation of carbon footprint of road transport & rail transport process and escalation or reduction in carbon footprint after implementation of rail-transfer process. The study found that, replacing truck haul with rail haul would lead to reduction in carbon footprint of about 16% in Magadh OC and Amrapali OC mines vis s vis road transport.

Study for projection of benefits of mechanized conveyor belt and silo loading system in coal loading and transport activities under First Mile Connectivity project

CIL aims to replace the existing road transport between pit head and dispatch points and switch over to a seamless mechanized coal transport through conveyor belts, a covered system for coal movement reducing dust pollution. CIL had engaged CSIR-NEERI for projection of benefits of mechanized conveyor belt and silo loading system in coal loading and transport activities. The study found that commissioning of FMC related infrastructure and activities have led to environmental benefits in terms of reduction in air pollution, reduction in CO₂-carbon footprint and reduction in ambient sound levels.

As per study conducted in Lingraj OC, by dispatching 16 MT through SILO, reduction in CO by 72.2%, Hydro Carbon by 70.8%, NO_x by 76.8%, PM₁₀ by 72.3% and PM_{2.5} by 71.8% will be achieved as compared to emission of pollutants through road transport. Total annual Diesel savings of 58,38,309 liters for reduced movement of payload and tipper amounting to 50.19 Crore. Annual saving for reduced transportation cost is 54.52 Crore.

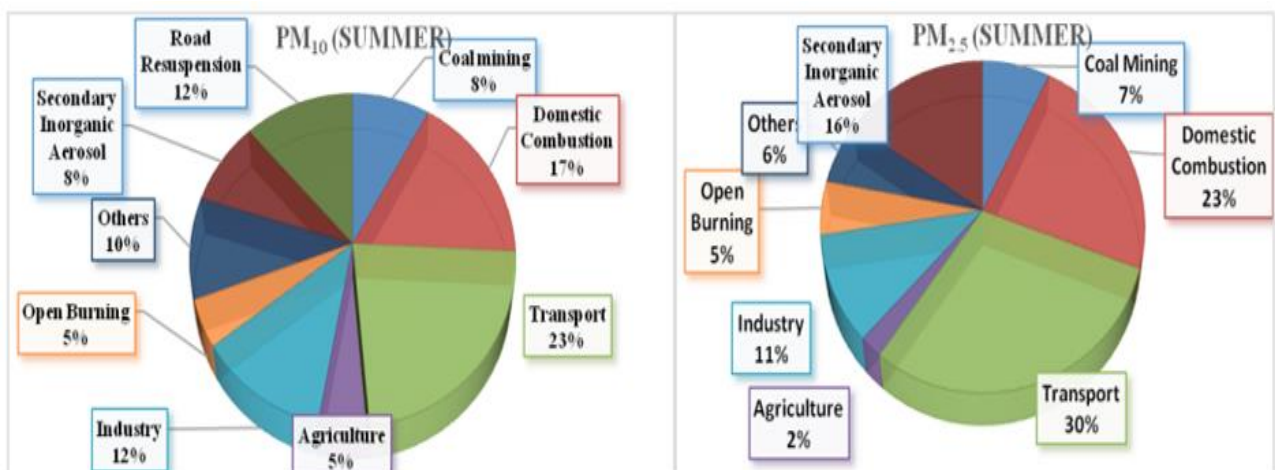
As per study conducted in Gevra OC, during 2020-21, 9.66 MT has been dispatched through SILO thereby achieving reduction in CO by 83.7%, Hydro Carbon by 83.3%, NO_x by 85.3%, PM₁₀ by 84.1% and PM_{2.5} by 83.8% as compared to emission of pollutants through road transport. Total annual Diesel savings of 26,95,736 liters for reduced movement of payload and tipper amounting to 23.08 Crore. Annual saving for reduced transportation cost is 42.10 Crore.

Environmental Performance Indexing

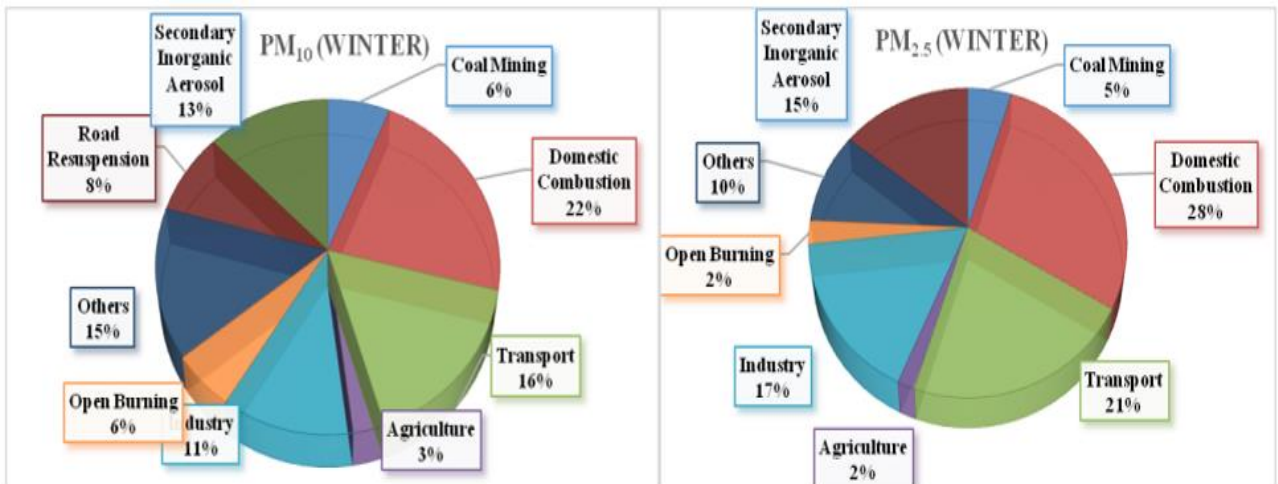
Coal India Limited (CIL) has a dedicated Sustainable Development Policy (SDP) effective from August 2013 with the commitments to protect and safeguard the environment. CIL is abiding by all the conditions stipulated in EC conditions. CIL through ICFRE has finalized the way forward to assess the environmental performance of its mines. Accordingly, ICFRE has developed two scores i.e. Environmental Management Index and Environmental Performance Index which is approved by CIL Board. ICFRE is undertaking the job of auditing and thereafter ranking of 35 mines of CIL based on the approved methodology. The same will be progressively implemented in all the mines of CIL.

Source Apportionment Study by NEERI for Jharia Coalfield

Source Apportionment Study conducted for Jharia coalfield by National Environmental Engineering Research Institute (NEERI). Final Report has been submitted by NEERI. Study as per report suggests that contribution of PM₁₀ and PM_{2.5} by coal mining varies from 6% (winter) to 8% (summer) and 5% (winter) to 7% (summer) respectively. Major contribution of PM₁₀ and PM_{2.5} is from transport section and domestic combustion which jointly contribute from 38% (winter) to 40% (summer) for PM₁₀ and 49% (winter) to 53% (summer) for PM_{2.5}.



Source contribution at receptor location of PM₁₀ and PM_{2.5} in summer



Source contribution at receptor location of PM₁₀ and PM_{2.5} in winter

Digital Transformation:

CIL has planned for “Performance Enhancement through Digital Transformation” in seven mines viz. Dipka OC, Kusmunda OC, Gevra OC, Nigahi OC, Jayant OC, Khadia OC, Dudhichua OC.

Implementation of such measures will help:

- Integrated Mine Planning, Scheduling and Compliance tool
- Analytics Powered Fleet Management System
- Connected Worker: Attendance monitoring & Presence Mgmt.
- Operator / Non-executive productivity improvement
- Drill and Blast Optimization tool
- HEMM Performance Cockpit with Predictive Insights
- Land Acquisition Management System
- Drone based Survey
- Contractor performance management
- Spares Lifecycle Management / Connected Material Fuel Management System
- Safety Management System
- Connected Mine
- Integrated System Based Dragline Management
- Coal Grade Quality Monitoring
- Improved Management of environment attributes in the mine take area

Benefits will accrue from better utilization of resources and improvement in the overall environmental regime of the area where the mines are located.

New Initiative – From Waste to Resource

Utilization of surplus Mine Water-

- During its normal course of operation, water is being pumped out from mine to win the coal in both the systems i.e. Opencast & Underground mines because coal seams normally exists below the aquifers.
- This pumped out water is discharged to surface and utilized for domestic purpose in CIL colonies along with industrial usage required in the mining operations.
- Rest of the water is discharged through the settling tank established in surrounding mine premises from where it is discharged to the nearby seasonal or perennial nullahs, which in turn being used by the local farmers for cultivating the land and also during its course of flow it recharges the ground water table of surrounding areas to some extent. Besides this usage still some water flows to the rivers, which is a sheer wastage of natural resources so far as the surrounding villages are concerned.
- In 2022-23, till Oct-22, the mine water discharged from mines of different subsidiaries of CIL is catering to the surrounding population (no. of population catered 11.22 Lakh). The total no. of villages catered is 837. During 2021-22, mine discharge was about 6047 LKL of which about 46% was shared for community use.

Overburden to Sand:

Most of Indian coal deposits occur in major river basins of Central India, like Damodar, Wardha, Hasdeo etc. Sand is essential ingredient for construction of housing colonies and commands huge demand. Currently it is met through sand mining and dredging from water courses of rivers. This affects the eco-system of rivers and is preventable. We have taken proactive steps in this direction and started segregating sand from our overburden formations.

Currently, two OB to sand plants are operational in WCL. The sand segregated from OB formations is being provided to agencies which are implementing housing under government schemes like Pradhan Mantri Awas Yojana (PMAY) and the likes. About 22,287 m³ of sand was generated from 55,719 Cu m OB in FY 2021-22. CIL is committed to implement the same in its other subsidiaries in a phased manner. 7 sand segregation plants are under process of installation in subsidiaries of CIL

The commissioning of sand segregation plants will improve the riverine ecosystem, improve the flow, accelerate ground water recharge potential and quality of water flowing in their courses. Sand segregation plants will go a long way in preventing mining / dredging of river courses which will be CIL's contribution to Mother Nature

COMPLIANCE OF ENVIRONMENTAL NORMS BY SINGARENI COLLIERIES COMPANY LIMITED (SCCL)

In order to comply with the guidelines issued by MoEF&CC on Corporate Environmental Responsibility MOEF&CC vide D.O. No. J-11013/41/2006-IA.II (I) Pt. dt. 03.06.2011; the Environmental Policy of SCCL has been formulated based on the major activities of the company & their significant impact on environment, as furnished hereunder:

“To be a role model in protection of environment for sustainable development, SCCL is committed to implement the best global practices in all its operations through prevention / mitigation of pollution, proper disposal / recycling of wastes and bringing awareness among all the stakeholders for continual improvement in environmental performance”

Objectives of Environmental Policy:

The main objectives of Environmental Policy have been summarized hereunder:

- To take account of environment concerns in planning and decision-making.
- Compliance of conditions imposed in Environmental Clearance, Forestry Clearance, CFE, CFO and other statutory clearances issued by regulatory agencies.
- To prevent pollution of surrounding habitation by continuous monitoring and measurement of Environmental parameters.
- Identification of significant impacts and preparation of environment management systems for implementation at mines / units.
- To reclaim the mined out areas concurrent to mining operations and take suitable measures for conservation of adjacent forests, wildlife and bio-diversity.
- To reduce waste generation and promote recycling of materials, wherever possible.
- Optimum utilization of resources i.e. Electricity, Oil and Water.
- To take up developmental works in surrounding villages as a part of corporate social responsibility.
- To provide appropriate training and disseminate information to enable all the employees to accept individual responsibility for environment protection, implement best practices and work in partnership to create a culture of continual improvement.

The Environmental policy and its objectives have been approved by SCCL Board of Directors on 11.11.2011. Subsequently, in order to fulfill the objectives of Environmental Policy, guidelines have been framed in different facets of environmental management, in line with the code of practice evolved by CPCB for environment pollution prevention & control for coal mines, for bringing uniformity in planning, execution and monitoring systems thereby ensuring environmentally sustainable coal mining operations. The environmental policy and a hierarchical system of reporting of non-compliances to higher management have been circulated to all the administrative areas for implementation.

Compliance of Environmental Legislation:

Various Environment Acts & Rules are applicable to coal mining projects i.e. The Air (Prevention and Control of Pollution) Act enacted in 1981, The Water (Prevention and Control of Pollution) Act enacted in 1974, The Environment (Protection) Act enacted in 1986, Forest (Conservation) Act, 1980 and their subsequent amendments and rules made therein. SCCL is taking up following measures in compliance to legal, regulatory and ethical requirements:-

- SCCL is obtaining environmental clearances for its new / expansion coal mining projects in accordance with the procedure prescribed by MoEF&CC vide Environmental Impact Assessment (EIA) Notification, S.O. No. 1533 (E) dated 14th September 2006 and its amendment Notification, S.O. 3067(E) dated 1st December 2009 including circulars issued from time to time with reference to environment clearance process.
- Ensuring compliance of conditions stipulated in Environment Clearance, CFO, Forestry Clearance and Ground Water Clearance.
- Submission of half-yearly compliance reports in respect of the stipulated prior environmental clearance terms and conditions of mines in hard and soft copies to MoEF&CC, RIO, Hyderabad on 1st June and 1st December of each calendar year, which is a mandatory requirement under EIA Notification. MoEF&CC has stipulated vide O.M. J-11013/41/2006-IA II(I) dated 6th April 2011 that the six monthly EC compliance reports and monitored data should be submitted to Regional Office of MoEF&CC and shall be displayed on company website. SCCL has made provision in SCCL website for display of the reports.
- Obtaining Consent for Operation from APPCB for mines, workshops & stores under red hazardous category, as per Section 25 of the Water (Prevention & Control of Pollution) Act, 1974 and Section 21 of the Air (Prevention & Control of Pollution) Act, 1981.
- Obtaining authorization for stores and workshops under Hazardous Waste (Management & Handling and Trans boundary Movement) Rules 2022, ensure maintenance of records at unit level, furnishing an annual return following to the financial year to which the return relates.
- Filing of half-yearly returns to APPCB under Battery Waste Management Rules, 2022. Ensure that used batteries are auctioned to the registered recyclers only; records of such auctions are maintained and make these records available to APPCB for inspection.
- Obtaining authorization from APPCB for hospitals, dispensaries under Bio-medical waste (Management and Handling) Rules 2016.
- Disposing e-waste generated by the company to TSPCB authorized re-cyclers in accordance with e-waste (Management) Rules, 2022 and submit annual returns to TSPCB every year.
- Submission of an environmental statement for the financial year ending the 31st March in Form V to the concerned State Pollution Control Board on or before the

thirtieth day of September every year for the mines and units requiring consent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 or under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 or both or authorization under the Hazardous Wastes (Management and Handling) Rules, 2016 issued under the Environment (Protection) Act, 1986.

- Carrying out the environmental monitoring by following the parameters, frequency of monitoring and standards as per Ministry of Environment, Forests and Climate Change (MoEF&CC) Notification GSR: 742 (E) dt. 25.09.2000, applicable to Coal Mining Industry and National Ambient Air Quality Standards, 2009 for surrounding villages prescribed by CPCB.
- Carrying out post-project environmental monitoring of meteorology, air, water quality and noise levels through MoEF&CC/CPCB recognized laboratories in and around SCCL mining areas to study the impact of mining on surrounding environment and submission of quarterly post-project monitoring data reports to APPCB.
- Implementation of various pollution abatement measures to comply with the standards stipulated for air quality, water quality, noise & vibration levels, and vehicular emissions and submit monitoring data reports to MoEF&CC along with half yearly compliance reports.
- Formation of Environment management committee at mine level and conducting meetings at periodical intervals for review of compliance of environmental and other related clearances. Submission of minutes of such meetings to MoEF&CC along with half yearly compliance reports.
- Submission of pre- and post-monsoon phreatic surface level and ground water quality data to Telangana State Ground Water Department.

COMPLIANCE OF ENVIRONMENTAL NORMS BY NLC INDIA LIMITED (NLCIL)

Preamble

- ❖ NLCIL has followed Clean & Green Mining practices for the past 66 years which has created a sustainable green environment. The enviro-friendly sustainable development is achieved as a result of habitual activity of NLC India Limited since inception.
- ❖ NLCIL is practicing the Environmental management system to monitor the EC/FC conditions and CTE/CTO conditions periodically in all the industrial units of NLCIL by conducting periodical review Cell meetings at unit level and at corporate level.
- ❖ A sound Environment monitoring structure has been created with qualified Environmental Engineers at each unit and is monitored by a centralized Corporate Environment cell. As a result, all the Environmental norms are compiled as per the guidelines, rules & regulations of MoEF & CC, CPCB and SPCBs.

“COMPLIANCE OF ENVIRONMENTAL NORMS”- NLCIL.

1. ENVIRONMENTAL MONITORING SYSTEM

1.1 Air

1.1.1 Pollution control measures

In the areas surrounding the industrial premises, in order to meet the Ambient Air Quality norms prescribed the various control measures being adopted by NLCIL are:

- a. Installation of Water sprinkler systems/Fog systems
- b. Practice of Wet Drilling
- c. Adoption of **Electrically Operated** Belt Conveyor System & Bucket Wheel Excavators (BWE) for the past 3 decades to the maximum extent to reduce pollution load & carbon foot print.
- d. Adoption of CFBC boilers & Super critical boilers for NLCIL's new and expansion Thermal Power Plants for minimizing the emission of CO₂, SO₂, NO_x which have higher thermal efficiency and lower emission

- e. Electric vehicle based operating for public movement in Hospital, temple and GH within the campus.
- f. Dust suppression by green belt development in Bunker Areas & around the mining area
- g. Continuously operating Air Pollution Control (APC) measures such as Agglomerated Dust suppression system (ADSS), water jets, Water sprinkler systems etc., to control the fugitive emissions.
- h. Electrostatic Precipitators (ESPs) of more than 99% efficiency have been installed & continuously operated in all the power stations of NLCIL to remove the ash particles from the outgoing flue gas.
- i. In addition, the implementation of FGD is under progress to comply with the MoEF & CC's revised emission norms.

1.1.2 Environmental External Monitoring system

Tamil Nadu Pollution Control Board (TNPCB) conducts periodical surveys to monitor the Ambient Air Quality (AAQ) in the mining units. The results of the TNPCB for Neyveli Mines and NABL accredited labs for outside projects are well within the permissible limits and it is tabulated below.

Unit	PM ₁₀	PM _{2.5}	SO ₂	NO _x	Compliance
CPCB Norms	500 µg/m ³	250 µg/m ³	120 µg/m ³	120 µg/m ³	
Mine I	262	40	18	20	Complied
Mine IA	264	48	20	22	Complied
Mine II	260	46	22	23	Complied
BLMP	69.3	33.4	15.7	18	Complied
Talabira	255	145	20.2	30.5	Complied

1.1.3 Internal Environmental monitoring system

An in-house lab (CARD) accredited with NABL with adequate number of pollution monitoring devices is available in NLCIL which is carrying out periodical monitoring of Air quality on alternate days as per Consent to Operate (CTO).

NLCIL installed 13 AAQ stations in approval with TNPCB for monitoring the Air Quality Parameters, out of 13 AAQ stations, **10 AAQ stations in the surrounding villages are monitored by the NABL Accredited laboratory** and

the results are within the permissible limits and submitted to Statutory officials too. No Non Compliances have been reported so far.

The Ambient Air Quality standards of all 13 locations are given in the following table:

S. No	Location	PM₁₀	PM_{2.5}	SO₂	NO_x
CPCB standards		100	60	80	80
1	Block-29	55.9	18.4	3.0	14.6
2	Block-6	50.6	20.3	2.9	14.2
3	Block-8	39.8	19.1	3.0	16.6
4	Vadakkuthu	48.3	21.8	3.6	24.6
5	Umangalam	48.4	21.4	3.3	21.9
6	Mudhanai	46.1	21.2	3.3	22.2
7	Vadalur	49.4	22.4	3.3	22.1
8	Periyakurichi	49.2	22.2	3.2	23.6
9	Kulakkudi	45.2	21.2	2.9	22.2
10	Sathapadi	44.5	20.2	3.0	21.6
11	Kammapuram	46.8	21.0	3.3	22.9
12	Chinnakappankulam	46.3	20.6	3.3	25.1
13	Vaddakkuvellur	48.2	22.7	3.7	24.5

1.2 Water

In order to control the suspended solids generated from the ground water seepage or surface runoff water siltation wells & weirs are constructed along the canal in & around the mines.

NLCIL has provided Sewage Treatment Plants (STPs) & Effluent Treatment Plants (ETPs) at appropriate locations to treat the waste water generated before utilization for irrigation purposes or industrial purposes. All the ETPs and STPs are operating in a good condition. The treated water obtained from ETP and STP is reused for Gardening, greenbelt development, industrial washing uses and Irrigation purposes within the industrial premises.

TNPCB officials collect effluent and water samples from the mining units on a monthly basis for testing in their Advanced Environmental Lab (AEL), Cuddalore. The results of the effluent samples are well within the permissible limits.

The latest treated effluent discharge standards for all the units are given in the following table:

Unit	pH	TSS (mg/L)	BOD (mg/L)	COD (mg/L)
CPCB effluent Discharge standards	5.5 – 9.0	100	20	250
Mine – I	7.60	14	15.5	38
Mine – IA	6.72	14	20	164
Mine - II	7.09	12	16	75
TPS – I Expn	7.16	10	16	44
TPS – II	7.49	10	16	40
TPS – II Expn	7.90	14	18	48
NNTPS	7.43	12	18	44
BTPS	7.50	53	18	163

1.3 Noise Monitoring

Noise Monitoring is surveyed by TNPCB & NABL accredited labs and the report indicates that the norms are well within the limits and the latest result is tabulated below.

Unit	Values (dB)
CPCB Noise Standards	70 - 75
Mine – I	63.9
Mine – IA	66.6
Mine – II	66.6
BLMP	62.3
Talabira OC II & III	58.7
TPS – I Expn	62.8
TPS – II	63.6
TPS – II Expn	61.9
NNTPS	65.9
BTPS	63.8

2. STATUTORY REPORTS

2.1 Environment Statement

Annual filing in the form of Annual Environment Statement consisting of all the Environmental related data pertaining to the Industrial Units of NLCIL is being verified & submitted by qualified Environmental Engineer to TNPCB, CPCB and MoEF & CC every year and is being accepted and there is no violation.

2.2 EC/FC Compliance Reports

The EC/FC compliance reports of the units are being submitted to MoEF & CC on timely basis as stipulated in the EC/FC conditions. The Compliance statuses of EC/FC conditions and the Environment Monitoring data are regularly updated in MDMS portal also.

2.3 Waste Filing

Filing of Hazardous waste, E-waste, Batteries etc., are being submitted every year as per the timeline stipulated by MoEF & CC guidelines.

3.0 CONSENT TO OPERATE (CTO)

All the units of NLCIL are operating with valid Consents from every year from SPCB's. This is issued after complete inspection of the mining units and verifying the compliances norms of MoEF & CC. So far, no violations or non-compliances have been received.

4.0 ISO 14000 CERTIFICATION

All the industrial units have obtained ISO certificates, including ISO 14000 obtained for sound Environment Management activities carried out by the Units.

5.0 Environmental Improvement Works & Studies

NLCIL has always given paramount importance for sustainable development and environment improvement activities. In line with the Panchamrit COP26 commitments of our country, NLCIL is has undertaken the following studies & improvement works to contribute to achieve the National targets.

5.1 Renewable Energy Initiatives to reduce Carbon foot Print

In line with the commitments, NLCIL has installed renewable energy capacity of 1421 MW with ambitious plan to expand it to 6031 MW of Renewable Energy by

2030 in Tamil Nadu and various states of India. NLC India Limited is the first PSU to establish 1000MW renewable energy

5.2 Environment Audit:

Environmental audits are being carried out in industrial units to assess the activities of Environment protection and improvement works through third party.

5.3 Ecological Study:

For analysing the impact and effect of Green belts/rain water harvesting ponds, developed in mined out areas, this study is intended. The work was awarded & MOU was signed in 2021 with Annamalai University. The study is under progress.

5.4 Carbon Neutrality Study:

The study is intended for analysis the carbon Emissions as per ISO standards 14064 GHG/ IPCC protocol. The MoU was signed in 2021 Annamalai University. The study is under progress.

5.5 Comprehensive Health Study:

For analysing the impact of the NLCIL industrial activities on the environment in surrounding area, a comprehensive study was conducted by M/s Annamalai University.

6.0 Environmental Awareness

6.1 OBSERVATION OF ENVIRONMENTAL DAYS

NLCIL as a part of creating awareness of maintaining Good & Clean Environmental practices in all the activities observes important environmental Days in NLCIL and ensures the involvement of all the Units through the Unit Environmental Cell members.

During the financial year 2021-22 the following Environmental days were observed in NLCIL, as a part of awareness creation by CEC among the employees of NLCIL, School students and general public:

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|----------------------------|------------------------------|
| i. World Earth Day | ii. World Biodiversity day |
| iii. World Environment Day | iv. National School Tree Day |
| v. World ozone day | vi. World Car Free Day |
| vii. World Soil Day | viii. World Forest Day |
| ix. World Water Day | |

6.2 Mass Tree Plantation

A. Vriksharopan Abhiyan

- In view of the only single solution to the Global Climate Crisis, Govt. of India had launched Tree Plantation Campaign (Vriksharopan Abhiyan) 2021 on 19th August 2021.
- During the Vriksharopan Abhiyan event NLCIL had carried out mass tree plantation & distribution events at all its Mines & industrial Units. On a single day 2.4 lakhs tree plantations was carried out.
- The event of presided over by the Hon'ble Union Home Minister and Hon'ble Minister for Coal & Parliamentary Affairs through video conference.

B. Green Tamil Nadu Mission (Kurnkadugal)

Hon'ble Minister for Environment – Climate Change, Youth Welfare and Sports Development instructed TNPCB to take necessary action to develop 10000 Kurungadual all over Tamil Nadu through Industries as a polluters pay principle for the abatement of Ari/Noise pollution and for the resilience of Environment.

In view of the above, TNPCB requested for development of Kurungadugal under Green Tamil Nadu Mission, NLCIL- Mines has taken up the initiative and carried Mass Tree Plantations in 2022.

6.3 NLCIL- Green Awards

As a gesture for acknowledging the extensive practices in the Environmental front and for complying with the EC/FC conditions, GREEN AWARDS was bestowed upon NLC India Limited for the Sustainable Environmental initiatives in the industrial units during the year 2021-22.

Concluding Remarks

As a Responsible public sector, NLCIL mining units implemented all the Environmental norms prescribed by statutory Authorities and strictly following it. Apart from, implementing Environmental norms, NLCIL has developed a vast Green zone to maintain Environment sustainable manner. Green Belt Development and reducing air pollution
