



cmpdi
A Mini Ratna Company

**Central Mine Planning & Design
Institute Limited**

**Environmentally friendly CMPDI towards a
cleaner tomorrow**



Gondwana Place, Kanke Road, Ranchi, Jharkhand

Introduction

Central Mine Planning & Design Institute Limited (CMPDI) is a fully owned subsidiary of Coal India Limited (CIL) and a *Miniratna (Category - I)* company.

CMPDI is a premier consulting organization with over four decades of expertise in the areas of

- mineral exploration & geomatics,
- mine planning & design,
- environmental management including laboratory services



Environmental Services

CMPDI offers an array of services across the environmental management sector.

Thrust areas include:

- Environmental monitoring & laboratory analysis
- Environmental impact assessments & environment management plans
- Mine closure audits
- Design of pollution control facilities
- Ecological carrying capacity assessments
- Carbon footprint assessment
- Sand replenishment studies
- Soil Moisture Conservation studies
- Energy efficiency initiatives & energy audits
- Research & Development (R&D) in coal sector and Science & Technology (S&T) projects
- Sustainable development initiatives & reporting



Environmental monitoring & laboratory services

Environment laboratory of CMPDI (HQ) holds the following:

- Central Pollution Control Board (CPCB) recognition
- Jharkhand State Pollution Control Board recognition
- NABL (ISO 17025:2017) accreditation
- OHSMS 2018 certification &
- ISO-9001:2015 certification



AAS at Environment Laboratory, CMPDI HQ

Environment laboratories located across CMPDI Regional Institutes (RIs) also have NABL accreditation.

Laboratory services offered:

- **Environmental monitoring** including sampling & analysis of air, water, noise levels - as per statutory norms
- **Environmental baseline data generation** for air, water, noise, soil, flora-fauna, socio-economic parameters as per statutory norms
- **Special sample collection and analysis** for soil, fly ash of coal mines and power plants, etc.



Environment Laboratory, CMPDI HQ



AAQMS instrument onsite

Laboratory services

The laboratories are equipped with state-of-the-art equipment facilities like

- Respirable Dust Samplers (RDS) & Fine Particulate Sampler (PM2.5) and Sound Level Meter
- Atomic Absorption Spectrophotometer (AAS), Inductively Coupled Plasma (ICP) Spectrophotometer, Gas Chromatograph (GC), Ion Chromatograph (IC), TCLP



ICP at Environment Laboratory, CMPDI HQ



Ion Chromatograph at Environment Laboratory, CMPDI HQ

Continuous Ambient Air Quality Monitoring Systems (CAAQMS) is installed at CMPDI HQ to monitor PM10, PM2.5, NO_x, SO₂ and CO.



Environment Laboratory, CMPDI HQ



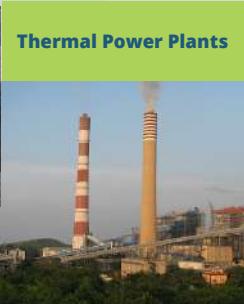
CAAQMS Data Station installed at CMPDI HQ

Environmental Impact Assessments (EIA) & Environmental Management Plans (EMP)

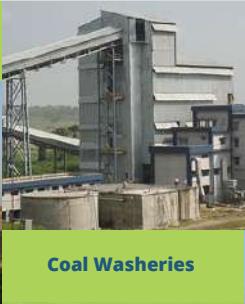
CMPDI is a **QCI NABET accredited consultant organization**. It has accreditation for preparation of Environmental Impact Assessment (EIA) reports in four sectors.



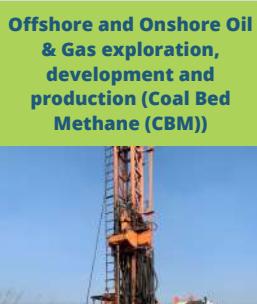
Mining of Minerals including Opencast / Underground mining



Thermal Power Plants



Coal Washerries



Offshore and Onshore Oil & Gas exploration, development and production (Coal Bed Methane (CBM))

CMPDI is the largest Accredited Consultant Organizations (ACOs) in India for preparation of EIA & EMP, having over 100 approved experts across four sectors and twelve functional areas.



Mine closure planning & audit

CMPDI prepares and scrutinises mine closure plans and also carries out periodic mine closure audits.



Design of pollution control facilities

CMPDI provides designs for pollution control facilities across the following:



Wind barrier at Gevra OC, SECL

Air pollution control & modelling

Water & wastewater treatment

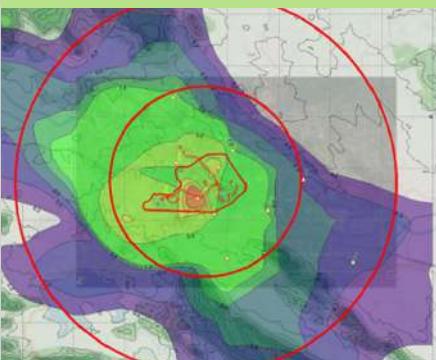


Mine water treatment plant, Jayant-OC, NCL



Solid waste management schemes

Noise modelling & attenuation



Ecosystem carrying capacity assessments

CMPDI has developed proficiency in ecological carrying capacity studies, including riverine studies.



Carbon Footprint Assessments

CMPDI has carried out Carbon Footprint Assessment Studies for Coal India Limited and is open to undertaking similar assignments.

The emissions from CIL operations are expected to account for 1.58% of the total country's emissions by the year 2030. CIL may become carbon neutral by 2040 by implementing the emission reduction measures.



Sand replenishment studies

Sand replenishment study are being undertaken for several rivers in the states of Rajasthan, Uttar Pradesh and Bihar.

CMPDI has prepared detailed methodology for replenishment of sand for MoEF&CC in pursuance to Hon'ble Supreme Court of India's order dated 11/11/2021.



Baghain river, Banda, U.P



Yamuna River, UP



Ken River, UP

Energy conservation measures & energy audits

Energy efficiency measures are being implemented at CMPDI

- installation of **rooftop solar power plants**
- installation of **LED lights** across the campus, including auto-timers for street lights
- installation of **energy efficient equipment** - ACs & super fans, water heaters and motor pumps as well as capacitor banks
- procurement of **e-vehicles**

Energy audits for coal mines is also being done periodically.



Rooftop solar panels installed at Main Building, CMPDI HQ



LED streetlamps installed at CMPDI Complex, Ranchi

Research & Development (R&D) in coal sector and Science & Technology (S&T) projects

CMPDI has worked upon a range of Research & Development (R&D) and Science & Technology (S&T) projects as listed below:

- Development of Emission Factor for Coal Mines
- Fly Ash Characterization for Mine Void Reclamation
- Acid Mine Drainage
- Fly Ash Utilization DST project
- Development of NRSC project on Monitoring Particulate Matter through Satellite
- Assessment of mine water environment and development of suitable, cost effective mine void aqua system for promoting pisciculture in abandoned quarries of Coal India Limited



S&T project - assessment of mine water environment and promoting pisciculture in abandoned quarries

Sustainable development initiatives & reporting

CMPDI has undertaken the following assignments under SDC:

- Status Reports on Environmental Sustainability, Mine Water Utilization, Greening initiatives across coal & lignite PSUs
- Validation of best practices across coal companies
- Carbon footprint assessment and offsetting
- Portal for online Peer Review of EIA/EMP
- Mine Data Management System (MDMS) portal
- Participation in Vriksharopan Abhiyaan by MoC



Land Reclamation

Land Reclamation

The overburden dumps in mining areas are reclaimed technical and biologically as a part of progressive mine closure.

During 2020-21, more than 19.61 lakh saplings have been planted over an area of 844 ha.

CIL subsidiaries have also deposited INR 8048.44 crores during FY 2020-21 into Escrow Funds towards mine closure activities.



Land reclamation monitoring is done through remote sensing survey by CMPDI periodically

Reclamation Status of CIL mines during 2020-21						
Particulars	No. of Mines	Total excavated Area (ha)	Area under Green Cover (ha)	Area under Backfilling (ha)	Total Area under Reclamation (ha)	Area Under Mining (ha)
OCP > 5 mcm (Coal + OB)	51	25404	4990 (19.64%)	11199 (44.08%)	16189 (63.73%)	9215 (36.27%)
OCP < 5 mcm (Coal + OB)	60	7089	925 (13.05%)	2855 (40.27%)	3780 (53.32%)	3309 (46.68%)
Total	111	32493	5915 (18.20%)	14054 (43.25%)	19969 (61.46%)	12524 (38.54%)

Eco restoration

- R&D projects for developing reclamation practices with the objective that the reclaimed land becomes a sustainable source of income to the local communities
- Eco-restoration work for a few mines with the help of Forest Research Institute (FRI), Dehradun and Delhi University



Eco-park, GKCC, Rishikesh Area, BCCL



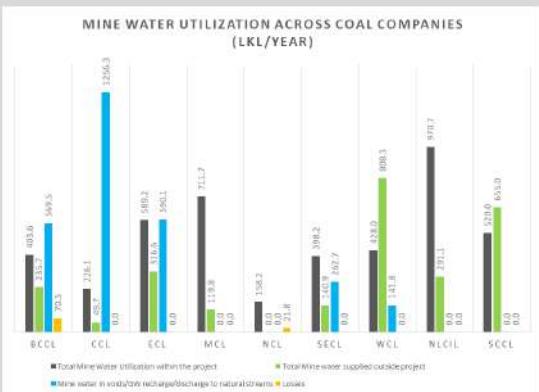
Reclamation site, Lojkura OC, MCL



Kayakalpa Vatika, CCL

Mine Water Utilization

Coal India's mine voids offer an opportunity for storage of mine discharge and rain water for the benefit of the local communities.



Mine sump, Dhandadihi OC, ECL - used for PHED water supply

Mine water accumulated in the pit lakes is being utilized for internal use within projects as well as by surrounding communities for drinking & agricultural purposes.



Mine sump, Bishrampur OC, SECL - developed as a tourism site and engaged in pisciculture



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Ranchi, Jharkhand
834 031



Our Regional Institutes:

Regional Institute - I

West End, G.T.Road
Asansol - 713 301
West Bengal

Regional Institute - IV

Kasturba Nagar, Jaripatka
Nagpur - 440 014
Maharashtra

Regional Institute - II

Koyal Bhawan, Koyal Nagar
Dhanbad - 826 005
Jharkhand

Regional Institute - III

Gondwana Place, Kanke Road
Ranchi - 834 031
Jharkhand

Regional Institute - V

CMPDI Complex, Seepat Road
Bilaspur - 495 006
Chhattisgarh

Regional Institute - VI

P.O. Jayant Colliery
Singrauli - 486 890
Madhya Pradesh

Regional Institute - VII

Plot No. E-4, Nr Gandhi Park
Samantapur, PO: RRL
Bhubaneswar - 751 001
Odisha