

## Highlights of achievement of CMPDI (2020-21)

- **About 13.1 billion tonnes of coal resources were added to the proved category through Detailed Exploration covering an area of about 304 sq km through 26 Geological Reports, which is the highest ever coal resources estimated by CMPDI in a year since inception. This leads to a growth of about 69% over the FY 2019-20 in which 7.77 BT proved resources were added.**
- In addition to this, about 1.33 billion tonnes of new resources (indicated and inferred category) were estimated through Promotional (Regional) Exploration covering an area of about 134 sq km through 4 Geological Reports.
- CMPDI has carried out 12.48 lakh metre of drilling against MoU target of 11 lakh metre including 0.44 lakh metre of promotional exploration. Moreover, a total of 1.35 lakh metre of drilling (including 0.44 lakh m by CMPDI) was carried out under Promotional (Regional) exploration against the target of 1.00 lakh metre during 2020-21 by various agencies under the Central Sector Scheme of MoC for this purpose.
- In Non-CIL blocks, about 6.45 Lakh meters of drilling has been carried during the year. About 5.27 Billion Tonnes of coal resources were added to the proved category through detailed exploration in Non-CIL blocks covering an area of 160.38 sq km through 12 Geological reports.
- In addition to this, 295.37 line km of 2D/3D seismic survey were carried out during 2020-21, against last year achievement of 28.26 line km with a growth of 945%.
- CMPDI took up exploratory drilling in 117 blocks/mines under Detailed Exploration and about 36 blocks under Regional Exploration in Coal & Lignite.
- 2D seismic survey is being carried out by Vibroseis imported from M/s SERCEL, France in 2 blocks i.e. Senduri Block and Nigwani Bakeli-A (Sohagpur Coalfield), Madhya Pradesh and acquired seismic data of around 77.46 Line Km.
- To increase the pace of exploration, 2D seismic survey along with 2 boreholes per sq km has been outsourced in 10 Coal blocks covering total area of 330 sq km with a total cost of Rs.270 crore (approx.).
- About 2.01 lakh meter of Geophysical logging were carried out departmentally especially for complimenting non-coring drilling.
- Hydrogeology Section of CMPDI has been accredited as “**Groundwater Professionals**” by CGWA for preparation of Hydrogeological reports for NOC for mining sectors in India. The Process of accreditation as GWCO (**Groundwater Consultant Organization**) by QCI-NABET is also under process.
- Aquifer Performance Test were conducted along with hydrogeological report for impact assessment for Fly Ash dumping into Gorbi mine void, NCL by VSTPS, Singrauli, MP.
- Hydrogeological study for Permeability and Seepage of Damodar River by bore wells into Cluster-XVI mines of BCCL.
- 148 nos. of Hydrogeological studies for Geological Reports / Project Reports / Slope Stability reports / Water supply schemes were prepared during 2020-21.

- Hydrogeological studies of 12 nos. of mining projects/mines were taken up for preparation of EMP. Hydrogeology section also carrying out groundwater level and quality monitoring of MoEF&CC cleared projects of CIL.
- A joint exercise was carried out by CMPDI along with GSI in August 2020 to identify the Prognosticated Coal Bearing Area in India. A total of 43 no. of Gondwana Coalfields and 19 no. of Tertiary Coalfields have been studied.
- The total basinal area of Gondwana Coalfields is about 65574 sq km, out of which a total of about 32761 sq km has been assessed to be prognosticated coal bearing area, an increase of about 69% over the earlier estimate of 19,400 sq km. The total regional exploration area is about 18636 sq km out of which 13256 sq km area is available for regional exploration. New blocks have been identified for future exploration in this unexplored area having about 300 for non-coking coal blocks & 24 for coking coal blocks.
- The total basinal area of Tertiary Coalfields was estimated to be about 1343 sq km, out of which a total of about 915 sq km was assessed to be prognosticated coal bearing area. The total regional exploration area stands at about 456 sq km. 91 new coal blocks have been identified for exploration in North Eastern region.
- 24 new coking coal blocks and 5 new good quality non-coking coal blocks have been identified for taking up of exploration from 2021-22 onwards.
- Geo-mining potentiality of coking coal blocks have been studied in details and a report on the same was prepared and submitted.
- DSS and ESZ analysis were carried out for all listed blocks (957 as on 01.04.2020) and made available to MoC for decision making on Auctioning of Coal Blocks. Mine summary of about 100 coal blocks were also prepared for Auction of Coal Blocks.
- **33 Project Reports** were prepared with **capacity addition of about 169 Mt per year.**
- 40 Environment Management Plans (including 31 Form-I) were prepared.
- During 2020-21, 14 nos. of research projects have been approved, which is highest during last 5 years and 6 nos. of research projects have been completed. `22.2 crore of fund was disbursed for R&D and S&T projects during 2020-21.
- 9 nos. of reports on controlled blasting and vibration studies were prepared for different mines of CIL to protect the surrounding habitats/important structures and extraction of locked-up coal safely.
- Random sampling and testing of Bulk/Cartridge Explosives & Accessories being used in the mines of CIL were carried out throughout the year and 56 reports were prepared in this regard. Additionally, 36 reports related to optimisation of blasting parameters/powder factor were also prepared.
- Random sampling and testing of bulk/cartridge explosives and accessories being used in the mines of SCCL and NLC were carried out throughout the year and 12 reports were prepared in this regard.
- CMPDI has been carrying Land Reclamation Monitoring of CIL mines on a regular basis based on high resolution satellite data. In the year 2020-2021, Land Reclamation Monitoring of total 111 projects comprising of 51 Opencast Projects producing more than 5 mcm (Coal+OB) category and 46 opencast projects, 09 clusters and 5 UG mines

producing less than 5 mcm (Coal+OB) category under different subsidiaries of CIL have been successfully completed.

- Vegetation Cover Mapping of CIL Coalfields based on high resolution satellite data is being done regularly for assessment of impact of mining on land use/vegetation cover in the coalfield region. During 2020-21, Vegetation cover mapping of seven coalfields viz. Umrer and Pench Kanhan Coalfields (WCL), Ib Valley Coalfield (MCL), Mand Raigarh and Sohagpur Coalfields (SECL) has been completed.
- Land Use / Cover Mapping of Core & Buffer Zone based on satellite data of 6 Opencast Projects were done during 2020-21. Land Use Cover Map for the leasehold area of 8 UG projects of SECL was also completed during 2020-21 for MoEF&CC compliance. In addition to this, Land Use / Cover mapping of Core and Buffer Zone of West Bokaro Colliery of M/s Tata Steel has also been completed.
- In new technology adoption, **CMPDI has procured drones for surveying and mapping applications**. The first drone has been supplied in December, 2020 equipped with state-of-art LiDAR optical and thermal sensors. The second drone is also supplied in the last week of March 2021. Flying / Operating Drones in India requires permission from Ministry of Civil Aviation. CMPDI has been granted conditional exemption to operate Drones in coalfield areas of Coal India Limited.
- In order to expedite the application of drones in coal industry, CMPDI has taken action for hiring of drone service providers for establishing its efficacy in various applications in coal industry. The first work against open tender for NCL has been awarded in March 2021. Tenders for other subsidiaries will follow soon.
- CMPDI has successfully conducted Gyroscopic Survey for determination of GYRO-Azimuth at 18 phases in 4 tunnels in Katra-Banihal Section of Udhampur-Srinagar-Baramullah Rail Link (USBRL) Project for M/s IRCON International Limited. This is a prestigious railway project of Government of India in Jammu & Kashmir. This survey was successfully completed in January, 2021.
- Detection of unauthorized structures using High resolution satellite imagery in expansion areas of Kaniha and Hingula OCPs of Mahanadi Coalfields Ltd. was successfully completed.
- CIL has undertaken 35 FMC projects (Phase-I) in coal mines of production capacity 4 Mtpa or more for enhancing coal handling efficiency through employing alternate transport methods like mechanized conveyor system and computerized loading into railway rakes. Tender documents of 35 FMC projects of different subsidiaries of CIL were prepared by CMPDI and all of them have been successfully tendered and finalized.
- A feasibility report on 20 MW Solar Power plant at Dugdha Washery BCCL has been prepared.
- CMPDI (HQ) was accredited with Anti Bribery Management System (ABMS) ISO-37001, 2016 by Bureau of Indian Standards, Eastern Region, Kolkata. CMPDI is the second PSU in India to get this accreditation.
- PR for Kotre Basantpur (5 Mty) of CCL, prepared by CMPDI, is the first project to be awarded in MDO mode in CIL. CMPDI also assisted MCL in successful award of the development and operation contract of Siarmal OCP (50 Mty) to MDO.
- **Continuous Ambient Air Quality Monitoring System (CAAQMS)** has been installed at CMPDI HQ for real time monitoring of air pollutants like PM<sub>10</sub>, PM<sub>2.5</sub>, CO, etc.

- **Coffee Table Book for CIL** was prepared in association with CIL. Environmental Status Report for Coal Sector (including CIL, SCCL, NLCIL and NTPC) for Ministry of Coal.
- **Mine Water Utilization Report** for the Coal Sector in India was prepared highlighting the mine water available, for own use and use by nearby community for domestic and irrigation.
- **Peer Review System for online vetting of EIA/EMP reports** has been developed and is under operation.
- Scheme for Hospital Liquid Waste Management of NCL was prepared for the first time in CIL.
- Environment Laboratory, RI-I, Asansol was granted NABL Accreditation on 02.12.2020 which is valid for a period of 2 years. It is the first laboratory in CMPDI to be granted accreditation for Noise Monitoring and to undertake 24 hours (Day – Night) monitoring of Noise Level.
- CMPDI has designed & developed a website (<https://scienceandtech.cmpdi.co.in>) for S&T research in coal & lignite sector to promote Research & Development (R&D) which provides the information related to completed and ongoing research projects and the guidelines for implementing coal research projects with different forms so that anybody can submit proposals in a requisite manner. It also has the lists & outcomes of completed projects and ongoing research projects to have a transparency & to avoid repetitive nature of projects.
- As per directives of MoC, new thrust areas for future research in coal and lignite sectors have been identified. Some new areas relevant to present need and to address the complex operations of the coal industry have been included like application of Artificial Intelligence & Machine learning, Innovation & Indigenization (Atma-nirbhar Bharat) of Advance Technology, Creation of wealth from waste, etc. Widespread circulation of thrust area among all leading research institutes of India has resulted in submission of research proposals on new subjects. A total of 75 nos. of new projects have been received during 2020-21.
- One S&T Project ‘**Assessment of Rare Earth Elementals (REE) and other economic resources in Coal & Non-Coal strata and Characterization of Acid Mine Drainage (AMD) and its pollution control from the North Eastern Region (NER) Coalfield, India**’ has been taken up in collaboration with Punjab Technical University, Chandigarh and Duke University, USA.
- Mine dossier and mine summary (including map and cardinal points) for 38 coal blocks for 1<sup>st</sup> tranche of commercial mining and 67 coal blocks for 2<sup>nd</sup> tranche of commercial mining was prepared and submitted to Ministry of Coal.
- CMPDI was instrumental in formulation and finalisation of Model Bid Documents on MDO mode for underground mines, opencast mines, discontinued mines and regionally explored opencast coal blocks.
- **Coal Bed Methane (CBM)/Coal Mine Methane (CMM) development in CIL:**
  - ✓ CMPDI is the Principal Implementing Agency (PIA) for ECL, BCCL and SECL for Development of CBM in their Leasehold areas.

- ✓ Tenders were floated for Raniganj CBM Block & Jharia CBM Block-I on 15<sup>th</sup> May, 2020 but no offer was received. Revised bid document was prepared by CMPDI after incorporation of bidders' suggestions and was approved by the CIL FDs on 27<sup>th</sup> Oct., 2020. Global Tenders for Raniganj CBM Block & Jharia CBM Block-I were again floated on 30<sup>th</sup> October, 2020. No bid was received for Raniganj CBM Block. One bid was received for Jharia CBM Block-I which is under finalization. Tender for Sohagpur CBM Block floated on 12.12.2020 for selection of CBM Developer. Bid was opened on 05.02.2021. No bid was received.
- **CBM Project under ONGC-CIL JV:**  
Jharia CBM Block entered into Commercial phase with the spudding of first Development well on 05.01.2021.
- **Overlapping issues of coal blocks with relinquished/under relinquishment CBM blocks:**  
A joint team was constituted from DGH & CMPDI officials to study the overlap issues of coal blocks with relinquished/under relinquishment CBM blocks proposed for auction/re-auction by DGH. In the joint exercise carried out, 108 nos. of coal blocks have been freed from overlapping (overlap area  $\approx$  1218 sq.km.) with 17 relinquished/under relinquishment CBM blocks by re-carving CBM Blocks & coal block boundaries.
- **Consultancy Services outside CIL:**
  - ✓ CMPDI has **obtained jobs worth `20.15 crores during 2020-2021** from 23 Organizations which includes consultancy jobs from PSUs/Govt. Organizations including Ministry of Coal and Private Companies.
  - ✓ **Jobs worth `68.94 crores have been successfully completed** for 18 Organisations. Some of the major clients are NTPC Ltd., THDC India Ltd., JSW Steel Ltd., Singareni Collieries Company Limited (SCCL), NLC India Ltd., IRCON International Ltd., etc.
  - ✓ Some of the major jobs obtained are 'Preparation of Mining Plan (including Mine Closure Plan) and Project Report (PR) for Bandha Coal Block of M/s EMIL Mines and Mineral Resources Ltd.', 'Providing Consultancy services for setting up VK7 CHP at KGM Area on EPC mode of M/s SCCL', 'Preparation of Detailed Project Report (DPR) of Tokisud North OCP of M/s NMDC Limited', 'Providing consultancy services - Design, Supply, Erection, Commission and testing of Coal handling plant at RGO3 6CHP Area on EPC mode of M/s SCCL', 'Providing consultancy services for setting up 10 MTPA conveyor stream at PKOC, MNG area on EPC mode of M/s SCCL', 'Appointment of external agency for carrying out different survey works of Kerendari coal mining Project of M/s NTPC Ltd.'
- Exploration program of CMPDI for non-CIL and CIL areas covers 951 coal blocks. As directed by the MoC, a portal named CBDMS (Coal Block Data Management System) has been developed at CMPDI incorporating the features such as 'Existing projects/mines operating in the blocks', 'Quantity of coal extracted and balance reserves in each block', 'Present status of exploration with extent in each block', 'Expenditure made so far in each block'. Above portal is expected to help in taking policy decisions on strategic planning of coal sector.
- **Online MS Project Server** has been established for creation of Dashboard with respect to monitoring of QPR Projects, FMC Projects, CIL Contracts and other Projects. The purpose of establishing the Master Control Network is to monitor the activities, tasks,

resources and cost constraints across the CIL Projects. The classified dashboard has been created using Power-BI for visual presentation and showing the various time bound activities, slippages along with alarms to the resource persons.

- An integrated mobile app “**CIL Samvaad**” has been developed by CMPDI for lodging issues by employee of subsidiary / consumers / vendors. This app is user friendly and open to all stake holders. A quick response team with employees of various faculty are continuously monitoring the issues raised in the app for its quick redressal.
- An integrated mobile app “**CIL EYE**” has been developed by CMPDI for monitoring CCTV cameras installed at vulnerable points in CIL subsidiaries.
- Quarter Complaint system (<https://estate.cmpdi.co.in>) portal for comprehensive maintenance of colonies for CMPDI has been developed.
- A working group on Coking Coal Mission was constituted by Coal India Ltd. in November, 2020. A “Report on Coking Coal in CIL Blocks, December, 2020” was prepared by CMPDI and presentation was made to Secretary (Coal) on 23.12.2020. CIL was asked to prepare a strategy paper on augmentation of coking coal production and washeries in the country and the same was prepared and submitted to CIL for submission to MoC.
- An MOU was signed between CMPDI and Department of Mines and Geology, Govt. of Jharkhand on 8<sup>th</sup> Feb’21 at Ranchi for engaging CMPDI to assist in exploring various potential opportunities for the identification, exploration & development of Mineral Blocks within Jharkhand. This MOU will be for a period of 3 years can be extended upon written consent of both the parties.
- An MoU was signed between CMPDI and Department of Geology & Mining (DGM), Govt. of Arunachal Pradesh on 25<sup>th</sup> February, 2021 at Itanagar, Arunachal Pradesh for engaging CMPDI to take up exploration and allied activities for coal and non-coal minerals of Arunachal Pradesh State. This MOU will be for a period of 3 years and can be mutually extended further upon written consent of both the parties.
- An MoU was signed between CMPDI and Central Institute of Petrochemicals Engineering and technology (CIPET): CSTS, Ranchi for “Providing Residential Skill Development Training in the field of Plastic Engineering to 40 beneficiaries from villages of Ranchi district through CIPET” under CSR of CMPDIL HQ, Ranchi.
- CMPDI in association with Coal India Ltd. and US EPA, under the aegis of Ministry of Coal organised an International Webinar on the theme "CBM Resource- Reserve Assessment" to share and discuss experiences of globally recognised experts in the CBM field to assess different Methodologies & techniques, CBM classification and other related issues to accelerate CBM Development in India with special reference to CIL areas.
- 100 KLD STP laced with MBBR Technology is successfully operational at CMPDI, RI-IV Colony Complex and the treated water of about 75 KL per day is being fully utilized for horticulture and other cleaning works in the Colony premises. No waste water is discharged outside colony premises.
- Online Workshop for training on Slope Stability for 125 geo-technical cell officers of MCL was organized.

- e-Book of Compendium of CVC/ CIL/ MOC/ DOPT/ CMPDI Circulars & Guidelines was published.
- Out of total Supply Orders of `21.20 crore placed during 2020-21, Supply Orders of `9.64 crore (45.51% of total) were placed on MSEs. The % of procurement from MSEs is well above the mandated target of 25% of total procurement.
- Supply Orders for Equipment/Software such as Seismographs, DGPS, Matlab/Surpac/Minex Software have been placed for strengthening the exploration/surveying job.
- **CSR (Corporate Social Responsibility):** Against target of statutory provision of 2% of the average net profits of the preceding three years i.e. `4.648 crore, expenditure of `4.69 crore (provisional) has been made.
- **Skill Development under CSR:** Under CSR, a total of 80 youths are being provided skill development training in Plastic Engg. through CIPET.
- **In-House Training:** A total of 514 employees have been trained in-house against the target of 500 employees on different technical and non-technical subjects.
- **Apprenticeship Training:** During 2020-21, CMPDI engaged 166 apprentices at its HQ & RIs in different disciplines of Drilling, Mechanical, Civil, Computer Science, Mining, etc.

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