

PROJECT & PLANNING

Command Areas of Operations:

There are 14 numbers of operating Areas with 80 numbers of working mines, 48 Underground mines, 22 opencast mines and 8 mixed mines.

Research and Development Projects:

Detailed status of implementation of ongoing R&D projects funded under R&D grant of CIL is given in **Annexure-I**.

S&T Projects:

Detailed status of implementation of ongoing S&T Research projects funded under S&T grant of MoC is given in **Annexure-II**.

Modernization of Underground Mines:

In order to increase the level of modernization and mechanization in underground mines, intermediate technology deploying LHD/SDL was introduced in 57 nos. of mines of ECL till 2020-21. As on 31.03.2021, 237 nos. of SDLs, 39 nos. of LHDs and 137 nos. of UDMs were on roll (inclusive initial Survey-off equipment) in different underground mines of ECL. During 2020-21, production achieved from SDLs was 3.927 MT, from LHDs was 0.987 MT and from 2 nos Road Header (Part of Longwall Package) is 0.076 MT.

“Mass Production Technology” by deploying Continuous Miner combined with Shuttle Car (7 sets) has been deployed at Jhanjra, Sarpi, Kumardih-B UG and Khottadih UG projects and is running successfully. The production achieved during 2020-21 from 4 Nos. of Standard Height Continuous Miner and 3 nos. Low height Continuous Miner was 3.319 MT. In Jhanjra, Longwall technology is running successfully since August, 2016 & production during 2020-21 was 0.999 MT (Excluding Road Header). Overall underground coal production increased from 9.206 MT in 2019-20 to 9.308 MT in 2020-21 registering growth of 1.11%.

In addition to above the following steps are being taken for diversification / modernization:

Coal Bed Methane (CBM): Project Feasibility Report (PFR) has been formulated and approved by ECL Board administratively under MDO concept on 22.09.2018 covering lease hold area of Satgram, Kunustoria & Sripur Area. CMPDIL was awarded to work as Project Implementing Agency (PIA) for CBM on 08.05.2020. CMPDIL prepared revised Notice Inviting Offer and Model Revenue Sharing Contract considering Directorate General of Hydrocarbon under MoP&NG's suggestions and sent the same to CIL for approval.

Surface Coal Gasification (SCG): ECL Board in its 329th meeting held on 21.05.2020 approved for engaging M/s. PDIL as a consultant for “Pre-Feasibility Study and preparation of PFR for Surface Coal Gasification for multiple technology options”. M/s. PDIL submitted the draft PFR on 30.11.2020. The draft PFR was peer reviewed by M/s. Deloitte and submitted the report on 23.04.2021. ECL Board in its 338th meeting approved the Memorandum of Agreement (MoA) for appointment of CMPDIL as Project Implementing Agency (PIA) for the SCG Project at ECL on 14.05.2021. Subsequently, MoA was signed between ECL and CMPDIL for appointment of CMPDIL as PIA for the SCG Project at ECL on 18.05.2021 and work order was issued on 11.06.2021. M/s PDIL submitted the Revised PFR on 01.06.2021 which is under finalization.

Highwall Mining: The Highwall Mining is proposed to be introduced in Nimcha and Sripur Colliery. Contract agreement has been signed on 25.07.2018 for introduction of Highwall Mining Technology.

Man Riding System: During the Financial year 2020-21, there are total ten nos of mines where Man Riding Systems are in operation viz. Jhanjra (3 nos., Free Steered Vehicle); Parasea, Nimcha, Bansra, Shyamsundarpur & Chinakuri Mine III (Chairlift system in each mine) and Chinakuri Mine-I (2 nos. Battery locomotive). During 2021-22, Man Riding Systems are expected to be commissioned in two mines viz. Nimcha & Bansra, respectively (2nd set Chairlift System in each mine).

Steps taken to improve underground coal production:

Considering the various operational constraints, liquidation of upper seam, delay in availability of land for caving etc. actions have been taken to improve underground production mainly by introduction of Mass Production Technology deploying Continuous Miner with Shuttle Car in more number of underground mines in coming years like Khottadih-B, Jhanjra, Tilaboni, Siduli, Parasea-Belbaid apart from gradual phasing out of manual operations with the intermediate technology. Action has been taken to introduce more UDMs keeping in view of shortage of Drilling gang due to superannuation and the dual purpose of availability of more coal at face and supporting as well.



Visit of Shri Pramod Agrawal, Chairman, CIL to ECL for foundation stone laying of CHP at Jhanjra Area, accompanied by Shri P.S. Mishra, CMD, ECL.

Details of Projects Formulation during the year 2020-21:

Sl. No.	Name of Project	Capacity (MTY)	Estimated additional Capital (₹ in Crore)			
			Deptt	Part OS	OS	MDO
1.	Bonjemehari OCP	1.00	908.37	672.95	570.12	-
2.	Itapara OCP	3.50	2046.05	-	1318.39	1864.61
3.	Chuperbhita OCP	4.00	2619.68	-	1881.72	2508.29
4.	Sonepur Bazari Expansion OCP	12.00	8536.26	5365.88	-	-

Details of Projects Approval & Recommendation of Board of Directors of ECL for seeking approval of CIL Board during the year 2020-21:

Sl. No.	Name of the Project	Capacity (MTY)	Approved Capital Investment (₹ Crore)	Date of Approval
1.	Mohanpur Expansion PH-II	2.50	888.99	03.08.2020

Final approval of Projects by the Board of Directors of CIL during the year 2020-21:

Sl. No.	Name of the Project	Capacity (MTY)	Approved Capital Investment (₹ Crore)	Date of Approval
1.	Shyamsundarpur UG (including Sarpi Unit)	1.59	483.65	16.04.2020
2.	Expansion Project Report of Jhanjra UGP	Nominal Capacity- 5.0 Peak Capacity – 5.80	1210.12	16.04.2020
3.	Mohanpur Expansion PH-II	2.50	888.99	11.11.2020

OC Patches approved by ECL Board:

Sl. No.	Area	Name of OC Patches & Grade	Minable Reserve		Average Stripping Ratio	Peak Period (LTY)	Life of Mine (Years)	Date of approval
			Coal (L. Te.)	OB (L. Cum.)				
1.	Mugma	Badjna, G-5	5.67	34.42	7.08	3.05	2	10.06.2020
2.	Kenda	C L Jambad, G-4	16.90	117.30	6.94	4.00	5	10.06.2020
3.	Kajora	Jambad Extension, G-5	8.22	45.04	5.48	5.00	1.5	04.12.2020

Capital Projects/Schemes:

No. of New Project (Greenfield): 1 no. (Hura-C OCP)

Expansion/Revision/Foreclosure of Projects: 13 nos. (Jhanjra Expansion UG, Khottadih Expansion OCP, Khottadih CM, Kumardih-B CM, Mohanpur Expansion OCP, New Kenda OCP, Sonapur-Bazari Combined OCP, Chitra East OCP, Siduli Mix, Nakrakonda-Kumardih B OCP, Tilaboni UG, Parasea-Belbaid UG and Shyamsundarpur including Sarpi UG)

Others: 4 nos. (Nabakajora-Madhabpur UG, Narainkuri UG, Bankola R-VI and Khandra NKJ, which are under recast)

Total: 18 nos.

New Initiatives and Future Programme:

Technological up-gradation and Modernization of existing UG mines: 23 nos. of UG Mines were undertaken for study of enhancement of production by Consortium of M/s. ISM, M/s. SCCL and M/s. PWC. This is as per the MoC/CIL's directive. Report was submitted in January, 2018 and the same was accepted by Coal India Limited. Out of 23, three Project Reports (Siduli Mixed, Tilaboni UG and Parasea-Belbaid UG) were approved and five more Project Reports are under process of formulation/approval.

Introduction of mass production technology Continuous Miner (CM): The following mines have been identified for introduction of CM:

Sl. No.	Name of Mine/Project	Capacity (MTY)	Estimated Capital in ₹ Crore	Status
1.	Khottadih CM UG	0.60	Risk-Gain - 127.17	Coal production started in March, 2021.
2.	Kumardih-B CM UG	1.02	Equipment Hiring - 117.90	One LHCM was commissioned in December, 2019. Tender has been finalised for SHCM (one no.) and LOA was issued on 05.06.2020. Contract agreement was signed on 24.02.2021.
3.	Siduli Mixed	OC: 1.20 UG: 1.63	Equipment Hiring - 535.18	Project Report was approved in May, 2018.
4.	Tilaboni UG	1.86	Equipment Hiring - 916.62	For drivage of Incline, tendering is in progress.
5.	Parasea-Belbaid UG	2.07	Equipment Hiring - 826.42	For drivage of Incline, tendering is in progress.
6.	Shyamsundarpur UG (including Sarpi Unit): 2 nos LHCM (additional)	1.59	Equipment Hiring - 483.65	For drivage of Incline, tendering is in progress.
7.	Expansion Project Report of Jhanjra UGP: 2 nos. LHCM (additional)	5.00	Equipment Hiring - 1210.12	NIT for deployment of 2 nos. of additional LHCM was floated on 06.10.2020. Tender has been finalized and LOA issued in 1 st week of April, 2021.
8.	Nabakajora-Madhabpur Mixed	UG: 1.32 OC: 0.80	Risk-Gain - 984.11 Equipment Hiring - 636.27	Project Report is under recast for incorporating new guidelines of Mine Closure Plan.

Foreign collaboration/Technology Absorption-Adaptation and innovation:

Introduction of Continuous Miner at Kumardih-B UG Mine: One set of Low Height Continuous Miner (LHCM) was commissioned during 2019-20 by M/s. JMS Mining Pvt. Ltd. in collaboration with M/s. Joy Global, UK. Tender was finalized for one no Standard Height Continuous Miner (SHCM) and Letter of Acceptance (LOA) was issued on 05.06.2020. Contract agreement was signed on 24.02.2021 with M/s. Gainwell Commosales Pvt. Ltd.

Introduction of one number of Continuous Miner at Khottadih UG Mine: One set of SHCM was commissioned during 2020-21 by M/s. CMATL-SXTD-CMML (China).

Introduction of additional two nos. Low Height Continuous Miner at Jhanjra: NIT was floated on 06.10.2020 and Part-I & Part-II of the tender were opened on 30.12.2020 & 03.03.2021 respectively. Tender Committee Recommendation is under process of approval. Powered Support Longwall Panel at Jhanjra R-VI Seam is running successfully and produced 0.999 MT coal during 2020-21.

Status of achievement of MOU Target with respect to major milestone activities of On-going Projects for the year 2020-21:

Details of MoSPI monitored On-going Projects of costing more than ₹ 150 Crore				
Sl.No.	Name of Project	Milestones	Timeline for completion	Status of achievement
1.	Sonepur Bazari Combination OCP (Capacity: 8.00 MTY, Sanctioned Capital: ₹ 1055.05 Crore)	Construction of CHP (12 MTY)	March, 2021	Not achieved. Construction is in progress.
2.	Hura-C OCP (Capacity: 3.00 MTY, Sanctioned Capital: ₹ 359.69 Crore)	Possession of 20 Acre of Tenancy Land	March, 2021	Achieved. Land possessed 25.07 Ha during 2020-21.
3.	Chitra East OCP (Capacity: 2.50 MTY, Sanctioned Capital: ₹ 513.99 Crore)	Shifting of Khoon Village (30 PAFs)	March, 2021	Not achieved. Due to resistance of villagers.
4.	Siduli OC & UG (Capacity: OC: 1.20 & UG: 1.63 MTY Sanctioned Capital: ₹ 535.18 Crore)	Approval of estimate for shifting of HT Overhead line	March, 2021	Achieved. Approved and Work Order was issued on 21.12.2020.
5.	Jhanjra Expansion UG (Capacity: 5.00 MTY, Sanctioned Capital: ₹ 1210.12 Crore)	Construction of workshop	March, 2021	Not achieved. Construction is in progress and expected to be completed in August, 2021
6.	Nakrakonda Kumardihi-B OCP (Capacity: 3.00 MTY, Sanctioned Capital: ₹ 502.68 Crore)	Floating of tender for HEMM procurement	March, 2021	Achieved. Tender for procurement of HEMM for coal production was floated in September, 2020.
7.	Tilaboni UG (Capacity: 1.86 MTY, Sanctioned Capital: ₹ 916.62 Crore)	Floating of tender for drivage of a pair of inclines	March, 2021	Achieved. Tender was floated for Incline drivage (2 nos.) at Mine No. 1 on 15 th December, 2020.
8.	Parasea-Belbaid (Capacity: 2.07 MTY, Sanctioned Capital: ₹ 826.42 Crore)	Floating of tender for construction of approach road to proposed site of incline no 1 & 2	March, 2021	Achieved. Tender was floated on 28.05.2020 and Work Order was issued on 03.08.2020.

Major activities other than MOU milestones for the year 2020-21:

Sl. No.	Name of Project	Activities/Milestones	Target for the year	Achievement
1.	Sonepur-Bazari Expansion OCP	Possession of 67 Ha land	March, 2021	Possessed 34.23 Ha during 2020-21.
		Construction of CHP	March, 2021	Overall physical progress is 95% and commissioning is expected in June, 2021.
2.	Jhanjra Combined UGP	Possession of 25 Ha Tenancy Land	March, 2021	Completed. Possessed 26.12 Ha land during 2020-21.
		Finalisation of tender for two nos. of LHCM	March, 2021	Completed. NIT for deployment of 2 nos. additional LHCM floated on 06.10.2020. Tender was finalized and LOA issued on 1 st week of April, 2021.
3.	Kumardih-B CM UG	Finalization of tender for 2 nd set of Continuous Miner	March, 2021	Achieved. LOA issued on 05.06.2020 and Contract Agreement was signed on 24.02.2021 with M/s. Gainwell Commosales Pvt. Ltd.
4.	Hura-C OCP	Possession of 25 Ha Tenancy Land	March, 2021	Achieved. Land possessed 25.07 Ha.
5.	Chitra East OCP	Gazette Notification u/s 7 of CBA (A&D) Act, 1957 for 174.44	March, 2021	Achieved. Possession of 174.44 Ha (including 124.89 Ha of Tenancy Land) was applied under CBA (A&D)

		Ha land		Act, 1957. Notified under Section 4(1) of CBA Act on 30.06.2020 and notified u/s 7(i) on 18.12.2020.
6.	Khottadih Expansion OCP	Shifting of 60 PAFs (Bouripara of Billpahari village)	March, 2021	Achieved. 69 PAFs was shifted.
7.	Tilaboni UG	Gazette Notification u/s 7 of CBA (A&D) Act for 422.00 Ha of land	March, 2021	Achieved. Under Section 7(1) of CBA (A&D) Act, 1957 issued by Ministry of Coal on 12.02.2021.

Status of achievement of MOU Target for the year 2020-21:

Sl. No.	Performance Criteria	Unit in Measurement	Target for the year	Achievement
1.	CAPEX (₹ in Crore)	₹ Crore	1200.00	1025.87
2.	Percentages of value of CAPEX contracts / projects running / completed during the year without time / cost overrun to total value of CAPEX contracts running / completed during the year	%	100	53.05

Project Monitoring & status of Implementation is given in **Annexure - III**.

3.2. Status of CIL R&D Projects being implemented in command area of ECL upto 31st March, 2021:

Sl. No.	Name of the project	Financial Outlay (₹ in Lakh)	Date of Start	Scheduled date of completion	Progressive Disbursement (₹ in Lakh)	Status
1.	Underground Trapped Miner Location system. Project Code: CIL/R&D/1/35/10 Implementing Agencies: TCS, CMC & CMPDIL (ME), Ranchi	507.45 CMPDIL - 36.98 TCS/CMC - 470.47	15 th January, 2010	31 st August, 2021	447.86 CMPDIL - 28.86 TCS/CMC - 419.00	Apex Committee in its 32 nd meeting held on 30.12.2020 has extended the project up to June, 2021 with a consideration that more time should be given to M/s. TCS for conducting field trial at Jhanjra UG Mines, ECL.
2.	Development of guideline for prevention & mitigation of explosion hazard by risk assessment and determination of explosibility of Indian coal incorporating risk based mine emergency evacuation and re-entry protocol. Project Code: CIL/R&D/1/60/2016 Implementing Agencies: IIT-ISM, Dhanbad and CIMFR, Dhanbad	2413.21 IIT-ISM, Dhanbad - 1617.07 CIMFR, Dhanbad - 796.14	15 th April, 2016	14 th April, 2022	2267.76 IIT-ISM, Dhanbad - 1510.00 CIMFR - 757.76	Risk assessment for identification of gaps in existing mine entry and re-entry practices during or after emergency in Indian coal mines is in progress at IIT-ISM, Dhanbad. Lab analysis of intrinsic properties and petrographic characterization of the collected coal samples to know coal combustion behavior is also continuing. Simulation of coal dust explosion and study of effect of different inertising agents in 30 mtr. long propagation tube will be started after installation and commissioning of all above equipment at the campus of IIT-ISM, Dhanbad. Expected delay due to delay in procurement of equipment at IIT, Dhanbad. ISM has initiated for procurement of 30 mtr. long explosion tube from M/s. SIMTARS, Australia. Three equipments for which procurement order placed at earlier by IIT-ISM, Dhanbad have been delivered to IIT-ISM, Dhanbad but their installation has not been started till date. Order for procurement of 30 mtr. explosion chamber from M/s. SIMTARS, Australia has not been placed till date due to certain issues with M/s. SIMTARS, Australia. To resolve the issues, 3 meetings were held through Video Conferencing mode in June, 2020 & September, 2020 between IIT-ISM, Dhanbad and Australian counterpart and outcome is still awaited. Other implementing agency, M/s. CIMFR is working as per their revised schedule. Status was

Sl. No.	Name of the project	Financial Outlay (₹ in Lakh)	Date of Start	Scheduled date of completion	Progressive Disbursement (₹ in Lakh)	Status
						reviewed in 32 nd meeting of the Apex Committee. The committee advised IIT-ISM, Dhanbad to take up the matters with M/s. SIMTARS, Australia and other Australian counterparts to resolve the matters at the earliest. The Committee, agreed to recommend time extension of the project up to 14 th April, 2022 without any cost escalation to complete the remaining activities of the project for consideration of R&D Board of CIL.
3.	Requirement of air in mine for Mass Production Technology. Project Code: CIL/R&D/01/63/2016 Implementing Agencies: UMD, CMPDI(HQ), Ranchi	491.27	1 st November, 2016	31 st August, 2021	164.33	Field activities related to gas survey has been completed for 6 mines of BCCL, ECL and SECL till date. Further gas survey envisaged to be conducted in 6 more mines could not be undertaken due to lockdown. The envisaged objective could be achieved only after the analysis of the outcome of gas survey in respect of all the 12 underground mines where mass production technology has been deployed.
4.	High Ash Coal Gasification and associated upstream and downstream processes (Coal to Chemicals, CTC). Project Code: CIL/R&D/03/03/2017 Implementing Agencies: IIT-ISM, Dhanbad, IIT-Roorkee, CMPDIL, Ranchi, MCL, Sambalpur, ECL, Sanctoria and CCL, Ranchi. Technical collaboration of IIT-ISM, Dhanbad with Australian Universities	2160.721 IIT-ISM, Dhanbad - 1872.007 IIT, Roorkee - 131.804 CMPDIL, Ranchi - 156.910	20 th July, 2017	31 st August, 2021	1700.53 IIT-ISM Dhanbad - 1580.00 IIT, Roorkee - 105.00 CMPDIL, Ranchi - 15.53	The slow progress was deliberated in 31 st meeting of the Apex Committee held on 27.07.2020. The Committee after detailed deliberation opined that development of the gassifier at low pressures would not lead to a better understanding of coal towards gasification vis-à-vis selection matching gassifiers as well as utilization patterns and future strategies. In the above scenario, the Apex Committee recommended termination of the project to R&D Board of CIL for consideration with total expenditure of actual expenditure ₹ 253. 822 Lakh (IIT-ISM, Dhanbad: ₹ 134.242 Lakh; IIT, Roorkee: ₹ 104.05 Lakh and CMPDIL, Ranchi: ₹ 15.53 Lakh) only incurred under the project till date. The Apex Committee reiterated its earlier decision that IIT-ISM, Dhanbad must keep hold purchase orders of entire equipment and committed expenditure until final decision of R&D of CIL. Apex Committee advised all project proponents to submit the termination proposal including audited progressive expenditure in Form-III, IV and details of work done under the above project till date, which will be deliberated in the R&D Board of CIL. Above reports are awaited.

Sl. No.	Name of the project	Financial Outlay (₹ in Lakh)	Date of Start	Scheduled date of completion	Progressive Disbursement (₹ in Lakh)	Status
5.	Optical fiber based solar illumination of pit bottom and underground mine roadways and working face. Project Code: CIL/R&D/01/66/2017 Implementing Agencies: IIT, Kharagpur and ECL, Sanctoria	155.53 IIT, Kharagpur - 155.53 ECL - Nil	1 st August, 2017	31 st August, 2021	150.00 IIT, Kharagpur - 150.00 ECL - Nil	Project team from IIT Kharagpur visited the Jhanjra mine, ECL on 15 th December, 2020 and installed the developed system. First phase of demonstration done on 16 th December, 2020.
6.	Development of guidelines for design of all tiers of shovel-dumper dump above dragline dump, with delineation of phreatic surface, within dragline dump, throughout the year and validation study on two dragline mines of Coal India Limited (CIL). Project Code: CIL/R&D/01/68/2018 Implementing Agencies: BIT, Mesra, S&R Division, CIL(HQ), Kolkata	75.30 BIT, Mesra - 75.30	1 st May, 2018	31 st August, 2021	58.00 BIT, Mesra - 58.00	Under this project, so far, geo-engineering and Hydro-geological collection from field started and their analysis at BIT, Mesra is continuing. Collection of samples from Sasti and Mungoli OC, WCL and Block-II, BCCL has been done and their analysis continues. Factor of Safety (FOS) of Sasti and Mungoli OC, WCL calculated. Collection of geo-engineering parameters from Bina OCP, NCL done. The Apex Committee in its 31 st meeting held on 27.07.2020 took note about the progress of the above project, due to Covid-19 sample collection from Sonepur Bazarl, ECL has not been done till date.
7.	Development of Virtual Reality Mine Simulator (VRMS) for improving safety and productivity in coal mines. Project Code No: CIL/R&D/01/67/2017 Implementing Agencies: IIT-ISM, Dhanbad, S&R Deptt., CIL, ECL, CMPDIL, Ranchi, NCL and M/s. SIMTARS, Australia	1410.40 IIT-ISM, Dhanbad - 1320.40 CMPDIL, Ranchi - 90.00	1 st September, 2017	31 st May, 2022	1258.13 IIT-ISM, Dhanbad - 1250.00 CMPDIL, Ranchi - 8.13	a) IIT-ISM, Dhanbad vide mail on dated 13 th and 18 th February, 2020, informed that M/s. SIMTARS, Australia has indicated their inability and withdrawal from the project due to shifting of their policy. b) Due to which, required equipment has not been supplied to IIT-ISM, Dhanbad till date. c) To resolve the issues, 3 meetings through VC in June, 2020 & September, 2020 among IIT-ISM, Dhanbad and Australian counterpart have been held. d) Slow progress of the project was deliberated in the 31 st meeting of the Apex Committee held on 27.07.2020. Apex

Sl. No.	Name of the project	Financial Outlay (₹ in Lakh)	Date of Start	Scheduled date of completion	Progressive Disbursement (₹ in Lakh)	Status
						<p>Committee advised IIT-ISM, Dhanbad to take up the matters with M/s. SIMTARS, Australia and other Australian counterparts to resolve the matters at the earliest as IIT-ISM, Dhanbad had an agreement with M/s. SIMTARS, Australia.</p> <p>e) IIT-ISM, Dhanbad vide mail dated 8th October, 2020, requested to include Sustainable Minerals Institute - JKTech Pty. Ltd. ("SMI-JKTech"), University of Queensland, Australia as sub-implementing agency in place of M/s. SIMTARS, Australia to take-up the remaining activities of project within sanctioned cost.</p> <p>f) SMI- JKTech Pty. Ltd., University of Queensland, Australia has confirmed their co-operation and full support as sub implementing agency in the project and will take up the remaining work within the sanctioned cost with revised PO to be issued to SMI- JKTech Pty. Ltd. in place of M/s. SIMTARS, Australia as per revised time line proposed by them.</p> <p>g) SMI- JKTech Pty. Ltd. has also confirmed to implement the project within revised schedule after their inclusion as sub-implementing agency in place of M/s. SIMTARS, Australia.</p> <p>h) In view of above IIT-ISM, Dhanbad vide letter dated 28.10.2020 requested for change in implementing agency along with further time extension up to 31st May, 2022 as almost one (01) year time has lapsed without any work due to shifting policy of M/s. SIMTARS, Australia which was agreed by the Apex Committee in its meeting dated 30.12.2020.</p>
8.	Development and adoption of Real-Time Prognosis System (RTPS) for cost effective safe operation of mobile machinery: show-cased demonstration of dumper fleet. Project Code: CIL/R&D/01/71/2019	440.30 IIT, Kharagpur - 180.36; CIMFR, Dhanbad - 180.00 LTU, Sweden - 79.94	16 th December, 2019	15 th December, 2021	300.00 IIT, Kharagpur - 130.0 CIMFR, Dhanbad - 130.00 LTU, Sweden - 40.00	<p>a) Field visit to Sonapur Bazari OCP to collect the base line data completed.</p> <p>b) Kick-off meeting related to this project held on 06.02.2020 at ECL HQ under the chairmanship of Chairman-cum-Managing Director, ECL. Five (05) nos of KPIs have been identified for this study.</p> <p>c) Video-conference among project leaders from IIT-Kharagpur, CIMFR, Dhanbad and LTU, Sweden held on 10.03.2020 to finalize the specification of sensors, software and data formats.</p>

Sl. No.	Name of the project	Financial Outlay (₹ in Lakh)	Date of Start	Scheduled date of completion	Progressive Disbursement (₹ in Lakh)	Status
	Implementing Agencies: IIT, Kharagpur, CIMFR, Dhanbad, Lulea Technological University (LTU), Sweden and ECL, Sanctoria.					d) Data format has been sent to mine officials for clarification. The Apex Committee in its 31 st meeting held on 27.07.2020 took note about the progress of the above project.
9.	Design and development of drop test facility for pit bottom buffer used in underground coal mines Project code: CIL/R&D/01/74/2021 Implementing Agencies: CMERI, Durgapur and ECL, Sanctoria	248.61 CMERI, Durgapur - 248.61	10 th February, 2021	9 th February, 2023	-	Project Report approved in 32 nd Apex Committee of R&D Board, CIL held on 30.12.2020.
10.	Design and deployment of Ventilation Fan wind power recovery system as an alternate source of electrical energy in underground coal mines Project Code: CIL/R&D/04/12/2021 Implementing Agencies: IIT-ISM, Dhanbad & ECL, Sanctoria	66.07 IIT-ISM Dhanbad - 66.07	10 th February, 2021	9 th February, 2023	-	Project Report approved in 32 nd Apex Committee of R&D Board, CIL held on 30.12.2020.

3.3. Status of Coal S&T Projects funded by MoC being implemented in command area of ECL upto 31st March, 2021:

Sl. No.	Name of the project with Code	Financial Outlay (₹ in Lakh)	Date of Start	Revised/ Scheduled date of completion	Progressive Disbursement (₹ in Lakh)	Status
1.	Development of tele-robotics and remote operation technology for underground coal mines Project Code: MT (Eol)/162 Implementing Agency: CMERI, Durgapur, CIMFR, Dhanbad & CMPDIL, Ranchi	440.12 CMERI - 251.57 CIMFR - 125.55 CMPDIL - 63.00	September, 2012	September, 2021	388.00 For CMERI-250.00 CIMFR-75.00 CMPDIL-63.00	<p>a) Under this project, tele-robot has been developed and field trial conducted at Khottadlh Mine of ECL.</p> <p>b) The developed robot is capable of monitoring environmental parameters viz. percentage of CO₂, CH₄, O₂ and also humidity & temperature. The real time graphical-user-interphase (GUI) based navigational camera is capable of displaying the status of robot and 3D representation of operational environment in the underground mines from sensor data. Long range communication with the robot through multiple wireless routers was also established.</p> <p>c) The project proponents were advised to conduct further field trial after approval from DGMS for fine tuning the developed robot so that it can be used remotely in any underground mines for monitoring environmental parameters.</p> <p>d) IS certification from SAMEER, Kolkata has been obtained and other required certifications obtained from CIMFR, Dhanbad.</p> <p>e) Field trial permission from DGMS is awaited.</p>
2.	Indigenous development of IOT Enabled Technology for monitoring, analysis and interpretation of Longwall Shield for Improving Safety and Productivity Implementing Agency: IIT Kharagpur, CMPDIL & ECL	471.00 CMPDIL - 103.84 IIT, Kharagpur - 367.16	October, 2020	September, 2023	-	Standing Scientific Research Committee approved the Project on 09.10.2020.

Sl. No.	Name of the project with Code	Financial Outlay (₹ in Lakh)	Date of Start	Revised/ Scheduled date of completion	Progressive Disbursement (₹ in Lakh)	Status
3.	Study of hazards due to mining induced sub-surface cavities and waterlogged areas in inaccessible old workings in underground coal mines using geophysical technique Project Code: MT-173 Implementing Agency: IIT Dhanbad & ECL	199.96 IIT-ISM, Dhanbad- 199.96 ECL - NII	15 th March, 2021	14 th March, 2023	-	Standing Scientific Research Committee approved the Project on 10.03.2021.

Annexure-III

3.15 Project Monitoring & Status of Implementation of Ongoing Projects:

Sl. No.	Name of Project	Sanctioned Capital (₹ Cr.)	Original date of approval	Scheduled date of completion	Anticipated date of completion	Status of Implementation
1.	Sonepur-Bazari Combined OC (8.00 MTY)	1055.05	August, 2012	March, 2018	October, 2021	Production achieved in 2018-19: 10.03 MT 2019-20: 11.10 MT 2020-21: 9.48 MT Construction of Railway siding and new CHP is under progress. Possession of land and R&R are under progress.
2.	Hura-C OC (3.00 MTY)	359.69	October, 2015	March, 2022	March, 2022	Stage-II Forestry Clearance obtained and land possession is under progress.
3.	Jhanjra Expansion UG (5.00 MTY)	1210.12	April, 2020	March, 2029	March, 2029	Production achieved in 2018-19: 3.38 MT 2019-20: 3.50 MT 2020-21: 3.57 MT
4.	New Kenda OCP (1.20 MTY)	127.72	November, 2014	March, 2019	March, 2023	OB removal re-started from 22.07.2018. Coal production started on 28.12.2018. Production achieved in 2018-19: 0.103 MT 2019-20: 0.129 MT 2020-21: 0.300 MT
5.	Kumardih-B CM UG (1.02 MTY)	117.91	May, 2014	March, 2023	March, 2023	(i) Commissioning of 1 st set LHCM done on 11.12.2019. Production achieved in 2019-20 is 0.14 MT and in 2020-21 is 0.519 MT (ii) For SHCM (one no.) tender has been finalized, LOA was issued on 05.06.2020, Contract Agreement has been signed on 24.02.2021
6.	Chitra East OC (RCE) (2.50 MTY)	513.99	August, 2018	March, 2024	March, 2024	Production achieved in 2018-19: 2.03MT 2019-20: 2.05 MT 2020-21: 0.873MT Stage-II Forestry Clearance obtained, land possession and R&R are in progress.
7.	Mohanpur Expansion OC (2.50 MTY)	888.99	November, 2020	March, 2025	March, 2025	Production achieved in 2018-19: 0.748 MT 2019-20: 0.999 MT 2020-21: 0.820MT Land possession and R&R activities are delayed. Expansion Project Report (2.50 MTY) has been approved by CIL Board on 11.11.2020.

8.	Khottadih CM UG (0.60 MTY)	127.17	May, 2015	March, 2016	March, 2023	Continuous Miner has been commissioned and coal production started in Mar, 2021. Coal production of 0.271 MT was achieved during the year including 0.007 MT from Continuous Miner. Production achieved in 2018-19: 1.07 MT 2019-20: 1.16 MT 2020-21: 0.689 MT R&R of Billpahani village under progress. Land schedule has been approved on 31.08.2020. Matter of shifting of unstable location 105 (Hatia Basti) has been taken up with ADDA.
9.	Khottadih Expansion OCP (1.60 MTY)	140.25	May, 2017	March, 2020	March, 2022	LOA for Hiring of Equipment for OB removal issued on 20.06.2020. OB removal has been started on 11.11.2020.
10.	Siduli (OC: 1.20 & UG: 1.63 MTY)	535.18	May, 2018	March, 2026	March, 2026	Notification for acquisition of 422 Ha land u/s 7 of CBA (A&D) Act issued on 12.02.2021. Approval of various activities are in progress. Proposal for different activities has been initiated.
11.	Nakrakonda Kumardih B OC (3.00 MTY)	502.68	August, 2018	March, 2029	March, 2029	Project Report has been approved by CIL Board on 16.04.2020. Approval of various activities are in progress. Production achieved in 2018-19: 0.744 MT 2019-20: 0.825 MT 2020-21: 0.754 MT
12.	Tilaboni UG (1.86 MTY)	916.62	February, 2019	March, 2027	March, 2027	Project Report is under recast for incorporating new guideline of Mine closure plan.
13.	Parasea-Belbaid UG (2.07 MTY)	826.42	July, 2019	March, 2027	March, 2027	Project Report under Recast
14.	Shyamsundar pur UG (including Sarpi Unit) (1.59 MTY)	483.65	April, 2020	March, 2025	March, 2025	Project Report under Recast
15.	Nabakajora-Madhappur Block UG (0.30 MTY)	56.14	December, 2006	March, 2014	PR under Recast	Project Report under Recast
16.	Khandra NKJ UG (0.285 MTY)	18.81	July, 2003	March, 2009	PR under Recast	Project Report under Recast
17.	Bankola R-VI UG (0.24 MTY)	19.14	March, 2003	March, 2009	PR under Recast	Project Report under Recast
18.	Narainkuri UG (0.54 MTY)	149.06	February, 2009	March, 2015	PR under Recast	Project Report under Recast