

**List of completed R&D projects [ As on 1.04.2021]**

Sl.No.	Title of the Project	Implementing	Project Code	Approved Outlay (Rs. in lakh )	Date of start	Date of completion
1	Liquidation of standing pillars at W-4 Panel in Jhanjra ECL	ECL	CIL/R&D/1/01/97	10.90	Feb. 1996	Aug. 1996
2	Resource survey characterisation and blending studies of low volatile coking coal for their use in steel industry	CMPDIL	CIL/R&D/1/03/97	457.00	Jul. 1997	Sep. 2002
3	Depillaring with cable bolting using LHD at Madhusudanpur Colliery, ECL	ECL	CIL/R&D/1/06/98	40.75	Oct. 1997	Jan. 2001
4	Development of computerised continuous mining equipment condition monitoring system for maximum machine available time of working machines in mines-SECL/CMRI	SECL/CMRI	CIL/R&D/1/07/99	29.00	Jul. 1999	Dec. 2002
5	Strata control, roof support design for development and depillaring operations at andsProject, Kanhan Area WCL with detailed geotechnical study including measurement of in-situ stress and its effect-WCL / CMPDI	WCL/CMPDI	CIL/R&D/1/08/99	249.90	Aug. 1999	Dec. 2002
6	Geomining statistical database of South Karapura Coalfields, CCL	CCL	CIL/R&D/1/09/99	215.93	Aug. 1999	Mar. 2004
7	Establishment of Longwall starta control services	CMPDI	CIL/R&D/1/10/01	62.50	Jun. 2001	Mar. 2004
8	Introduction of shortwall technology for extraction of standing pillars with power roof support in pillars of Passang seam of Balrampur underground project.	SECL	CIL/R&D/1/11/01	3513.05	Jun. 2001	Dec. 2006
9	Flyash hydraulic stowing at Jarangdh colliery, Kathara area, CCL near Bokaro Thermal Power Station	CCL	CIL/R&D/1/13/02	20.37	Feb. 2002	Jul. 2002

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10	Characterisation of cleats in coal from Raniganj and Jharia coalfield	CMPDI	CIL/R&D/1/14/02	240.35	Jun. 2002	Mar. 2006
11	Capacity building for creation of an e-information centre on coal & lignite	CMPDI	CIL/R&D/1/15/04	82.50	Feb. 2004	Aug. 2005
12	Interactive Geo-Mining and Hydro-Geological Models for Augumentation of coking coal and ground water resources at West Bokaro Coalfields	CCL	CIL/R&D/1/17/04	239.49	Feb. 2005	Aug. 2007
13	Development of accurate and rapid method of correlation survey of UG Mines	CMPDIL	CIL/R&D/1/20/04	181.85	Feb. 2005	Oct. 2007
14	Application of chemical treatment & centrifugation in environment friendly disposal of coal washery tailings / effluent slurry	CMPDI/CCL	CIL/R&D/2/01/99	798.41 R&D-289.52	Jul. 1999	Aug. 2004
15	Restoration of bio-diversity of OB dump and backfilled areas using integrated bio-technology	WCL / NEERI	CIL/R&D/4/01/97	21.43	Aug. 1997	Dec. 2001
16	Optimisation of ambient air quality monitoring network and application of mathematical models of air pollution control at North Karanpura Coalfields	CMPDI / BIT	CIL/R&D/4/02/97	29.94	Jul. 1997	Mar. 2002
17	Utilisation of OB materials through modification of physico-mechanical properties for the construction of haul road.	BIT/CMPDI	CIL/R&D/4/03/98	41.87	Apr. 1998	Mar. 2004
18	Determination of the efficacy of soil sediment etc for prevention of spontaneous heating in coal stock pile at Samleshwari OCP, MCL	MCL	CIL/R&D/4/04/99	4.28	Jul. 1999	Oct. 2001
19	Assessment of qualitative impacts of dust on the agriculture crops around Padampur OCP, WCL	WCL/NEERI	CIL/R&D/4/05/02	12.32		
20	Assessment of assimilative capacity and resource apportionment analysis of air pollution in ambient air in Wardha Valley Coalfields	WCL	CIL/R&D/4/06/02	13.51	Jul. 2002	Jun. 2004
21	Resource Assessment and characterisation study of non-coking coals for sponge iron industries	CMPDIL	CIL/R&D/1/18/04	295.00	Feb. 2005	Sep. 2008
22	Application of high precision satellite imaging and DGPS Technology for online wide area subsidence monitoring study in Raniganj area, ECL	ECL/ IIT KGP	CIL/R&D/1/19/04	242.42	Feb. 2005	Jan. 2008
23	Technical study for old & active OB dumps of open cast mines in WCL to determine stability characteristics and dimensional parameters	IIT Kgp./	CIL/R&D/1/21/05	359.65	Nov. 2005	Oct. 2010
24	Development of methodology for rapid volumetric analysis of excavated insitu overburden integrating high resolution satellite, air borne laser scanner data supported with ETS through digital photogrammetric technique.	CMPDIL/	CIL/R&D/1/24/06	388.00	Aug. 2006	Apr. 2009
25	Exploration and determination of coal fire hot spots to prepare the strategy to put off the fire in Nimcha & Sandih mines.	ECL / Ms DMT-Avantika, Hyderabad	CIL/R&D/1/29/08	444.23	Feb. 2009	Apr. 2009
26	Development of CIL/CMPDI's capacity for pursuing exploration of CBM in deep seated coal deposits of Jharia/Raniganj coalfields.	CMPDI & ONGC	CIL/R&D/1/16/04	1991.91	Feb. 2004	Jan. 2011
27	Inventory and monitoring of underground and surface coal mine fire for modelling fire dynamics and rate of fire movements, Jharia Coalfields, Jharkhand using satellite thermal remote sensing data .	Presidency College, Kolkata & BCCL	CIL/R&D/1/23/06	138.4	Aug. 2006	Jun. 2010

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28	Investigation on augmentation of life of dump truck tyres through the improvement of tyre retreading compound and development of an optimum road maintenance management system.	IIT Kgp/ ECL/NCL	CIL/R&D/1/22/05	148.69	Nov. 2005	May. 2009
29	Indigenous development of PLC based integrated control and monitoring system for conveyors and other equipment of underground	RDCIS(SAIL) & CMPDI	CIL/R&D/1/26/06	182.00 RDCIS-151.50 CMPDI-31.50	Aug. 2006	Feb. 2011
30	Delineation of workings below railway lines near Ratibati colliery, stability analysis by numerical modelling and possible remedial measures.	CIMFR & ECL	CIL/R&D/1/31/08	20.90518	Feb. 2009	Jun. 2010
31	Development of immediate roof fall prediction system in U/G mines using wireless network	IIT, KGP and ECL	CIL/R&D/1/27/08	216.98	May. 2008	Feb. 2011
32	An investigation on Adsorption Characteristics of Indian coal and to ascertain recoverability of CBM	CMPDI & IIT, KGP	CIL/R&D/1/40/10	98.07 CMPDI- 8.05	Jun. 2010	Dec. 2011

	from deep-seated coal and lignite resources.			IIT, KGP- 90.07		
33	Establishment of co-relation between physico-mechanical properties, chemical properties and bonding strenght of cement & resin capsule used in roof bolting.	UMD Deptt, CMPD	CIL/R&D/1/37/10	126.98	Feb. 2010	Jan. 2012

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34	GPS based production reporting system in OCP Project Code: CIL/R&D/1/33/09	Systems Department CIL (HQ), Kolkata/ BCCL	CIL/R&D/1/33/09	54.00	Sep. 2009	Jun. 2012
35	Development of CMPDIL capacity for delineation of viable coal mine methane (CMM)/ Abandoned mine methane (AMM) blocks in the existing and would be mining areas having partly de-stressed coal in virgin coal seams	CMPDI, Ranchi	CIL/R&D/1/28/08	522.00	Jun. 2008	Mar. 2012
36	Generation/analysis of coalfield wise database of physico-mechanical characteristics of rock/coal and representative numerical models for appropriate solution to strata control problems.	UMD Deptt, CMPDI	CIL/R&D/1/36/10	241.8	Feb.2010	Jan. 2013
37	Development of guidelines for safe dragline dump profile under varying geo-engineering condition in opencast coal mines of Coal India	BIT, Mesra and CMPDI, Ranchi	CIL/R&D/1/38/10	75.60 BIT, Mesra-59.00 CMPDI-16.60	Feb. 2010	Jan. 2013
38	Eliminating the possibility of ignition of gas and incidences of explosion in underground coal mines due to electrical faults by application of innovative technology of fault diversion.	Safety & Rescue Division (S&R), CIL, Kolkata & Society for Mining Research Sustainable Development and Environment , Kolkata	CIL/R&D/1/44/10	11.022	Dec. 2010	Feb. 2012
39	Development of Indigenous tool for carrying out Random Sampling & Testing of Explosives and Accessories used in mines of Coal India Limited.	Blasting Cell, CMPDI(HQ), Ranchi and IIT, KGP	R&D/1/50/2012	428.06 CMPDI - 130.00, IIT, KGP-298.06	Feb. 2012	Jan. 2013
40	Analysis of in-situ stress for CBM exploration in Jharia Coalfield	CMPDI & ISM , Dhanbad	CIL/R&D/1/32/09	168.59700 ISM- 126.00 CMPDI-42.597	Mar. 2009	Feb. 2013
41	Effective utilization of low rank and low volatile high rank Indian coking coals for Blast Furnace (BF) coke making	CMPDI, Ranchi and (SAIL), Ranchi	CIL/R&D/3/1/09	265.00 CMPDI-245.00 RDCIS - 20.00	Sep. 2009	Feb. 2011
42	Assessment of performance of explosives/ blast results based on explosive energy utilisation	Blasting Cell, CMPDIL & NITK, Surathkal	CIL/R&D/1/41/10	236.35 CMPDI- 107.44 NITK-128.91	Jun. 2010	Mar. 2014
43	Investigations of Bolt Behaviour in Development and Depillaring Panels under Blast Induced Dynamic Loading.	CMPDI, Ranchi IIT, Kharagpur and RDCIS, Ranchi	CIL/R&D/1/42/10	491.08 CMPDI-198.50 IIT,KGP-229.54 RDCIS(SAIL)-63.04	Dec. 2010	Dec. 2013
44	Feasibility study of High Angle Conveying System (HAC) in Open Cast Coal Mines by Computer Modeling and Simulation.	Open cast Division CMPDI, Ranchi and E&M Department , CMPDI , Ranchi	CIL/R&D/1/43/10	211.5	Dec. 2010	Sep. 2013
45	Investigation on augmentation of life of dump truck tyres through the improvement of the tyre retreading compound and development of an optimum road maintenance management system-Phase-II	IIT, Kharagpur and BCCL, Dhanbad	CIL/R&D/1/45/10	64.37	Mar. 2011	Dec. 2013
46	Development of a notch cutting machine to facilitate construction of stoppings in underground coal mines.	Safety and Rescue (S&R)Division, CIL, Kolkata & Society for Mining Research Sustainable Development and Environment , Kolkata	CIL/R&D/1/47/11	11.15	Oct. 2011	Feb. 2013

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47	Studies on determination of free silica( $\alpha$ -quartz) content in respirable air borne dust in coal mines and preparation of data bank of free silica and other minerals present in dust as well as in coal.	CIMFR, Dhanbad and S&R Deptt., CIL, Kolkata	CIL/R&D/1/39/10	353.82 CIMFR- 353.82 S&R(CIL)- Nil	Feb. 2010	Jan. 2015
48	Assessment of prospect of shale gas in Gondwana basin with special reference to CIL areas.	CBM(Cell), CMPDI(HQ), Ranchi and Advance Resources International, Washington, DC, USA	CIL/R&D/1/46/11	512.20 For CMPDI- 424.90 For ARI, USA- 87.30	Apr. 2011	Dec. 2014
49	Indigenous development of Integrated Dumper Collision Avoidance system for opencast mines.	Mine Electronics Deptt, CMPDI(HQ), Ranchi and BEL, Panchkula, Haryana	CIL/ R&D/1/51/2012	354.51 CMPDI - 60.00, BEL, Panchkula-294.51	Feb. 2012	Jul. 2014

50	Studies on shrinkage swelling characteristics of some Indian coals to ascertain recoverability of CBM from deep seated coal and shale resources. Project Code:..	CBM Cell, CMPDI, Ranchi and IIT, Kharagpur	CIL/ R&D/1/53/2013	182.60 CBM, Cell, CMPDI- 55.70 IIT, Kharagpur- 126.90	Mar. 2013	Feb. 2015
51	Research and development on efficient energy management pilot study and action plan. Project Code:.. Impl. agencies:	Indian Institute of Social Welfare and Business Management (IISWBM), Kolkata and DFIC Management Consultants Pvt. Ltd., Kolkata	CIL/ R&D/1/55/2013	66.19 IISWBM-21.94 DFIC-44.25	Mar. 2013	May. 2014

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52	Construction of quick setting stopping in case of fire in underground mines using expansion foam agent	S&R Division CIL (HQ), Kolkata, NIT, Rourkela and M/s Trans Marketing, Kolkata.	CIL/R&D/1/48/11	51.34	Oct. 2011	Mar. 2015
53	Green House Gas Recovery from Coal Mines and Coal Beds for Conversion to Energy (GHG2E)	CBM Cell, CMPDI(HQ), Ranchi and European Union Research Commission, London	CIL/ R&D/1/49/2012	165.30 R&D-80.00 EU Cont.-85.30	Feb. 2012	Jul. 2015
54	Development of Dynamic GIS enabled Forward Cost Modeling (FCM) of land reclamation , control and monitoring of acid mine drainage problems in the context of continuation and expansion of the coal mining in Assam – an ICT based Environment Management Approach.	Birla Institute of Technology, Mesra, Kolkata Campus, Southern Conclave, Kolkata.	CIL/R&D/4/07/2013	95.68	Oct. 2011	Feb. 2013
55	Development of Rubber Compound and Repair Techniques for Trailing Cables of Underground Mining Machines.	IIT,Kharagpur and ECL	CIL/ R&D/1/54/2013	204.07	Mar. 2013	Feb. 2016
56	Design, Develop and Demonstrate a Micro-Grid system for optimization and control of Multiple source of power supply.	E&M Department, CMPDIL, Ranchi and Gujarat Energy Research and Management Institute (GERMI), Gandhinagar, Gujarat	CIL/R&D/1/56/2013	351.30 For CMPDI-33.80 GERMI, Gujarat-	Aug. 2013	Aug. 2016
57	Development of guidelines to predict distance between toe of the Shovel-Dumper dump and that of Dragline dump with consideration of safety and economical design of both Shovel-Dumper dump and Dragline dump.	Civil Engineering Deptt. , BIT, Mesra, Ranchi	CIL/R&D/1/57/2013	26.58	Sep. 2013	Aug. 2016
58	To find a methodology of safe liquidation in thick seams of Raniganj Coalfields: Design & Development & show-casing demonstrative trials at Khottadih colliery, ECL.	CIMFR, Dhanbad & ECL	CIL/ R&D/1/58/2014	41,066 CIMFR- 13,856 ECL- 27.21	Jul. 2014	Jun. 2016
59	Studies of techno-commercial efficacy of ANFO with low density porous prilled Ammonium Nitrate for blasting overburden in Coal mines Project Code:CIL/R&D/1/34/09	CMPDI, Ranchi / DFPCCL, Pune and WCL, Nagpur	CIL/R&D/1/34/09	206.8	Sep. 2009	31st March 2020
60	An integrated geo-physical approach for tectonic study in main coal basin of Singrauli coalfield using 3D inverse modeling of Gravity, Magnetic and AMT data.Implementing agencies.	IIT-ISM, Dhanbad and CMPD, Ranchi	CIL/ R&D/1/59/2015	364.50 IIT-ISM, Dhanbad- 317.00 CMPDI-47.5	26th Mar 2015	31st Dec. 2019
61	Assessment of applicability and performance of Ground based Interferometry Synthetic Aperture Radar (GbinSAR) in safety zoning of surface mining slopes.	IIT, Kharagpur and ECL, Sanctoria.	CIL/R&D/01/65/2017	478.27 IIT,KGP- 478.27 ECL- Nil	1st Aug. 2017	31st Jul. 2019
62	Dry Beneficiation of High Ash Indian Thermal Coal.	National Metallurgical Laboratory (NML), Jamshedpur; CMPDI, Ranchi and MCL, Sambalpur	CIL/R&D/02/08/2017.	216.77 NML -197.87 CMPDI-18.90	1st Sep. 2017	30th Nov.2019
63	Seismic data processing, interpretation and identification of thin coal seams using Inverse Continuous Wavelet Transform Deconvolution (ICWT-Decon) for resource estimation.	Gujarat Energy Research and Management Institute(GERMI), Gandhi Nagar and CMPDI, Ranchi	CIL/R&D/01/69/2018	249.02 GERMI: 197.18 CMPDI-51.8	1st May 2018	31st Dec. 2019
64	Multiple layer trial blasting for better recovery with less diluted coal.	IIT-ISM, Dhanbad, CMPDI, Ranchi	CIL/R&D/1/61/2016	496.24 ISM:431.24, CMPDI 65.0	15 <sup>th</sup> Jul. 2016	14th Jan.2021
65	Optical fiber based solar illumination of pit bottom and underground mine roadways and working face	IIT, Kharagpur and ECL, Sanctoria	CIL/R&D/01/66/2017	155.53 IIT-KGP-155.53 ECL- Nil	1 <sup>st</sup> Aug, 2017	Jan.2021