

LIST OF ONGOING S&T PROJECTS
(As on 07.07.2021)

Sl. No.	Name of the project, Implementing Agency(s) & Objective(s)	Date of Start	Date of Completion	Approved Outlay (Rs.in lakh)
1	2	3	4	5
1	<p>Coal Bed Methane (CBM) reserves estimation for Indian Coalfields</p> <p>[Project code: CE-31]</p> <p>Implementing Agency: Indian Institute of Engineering Science and Technology(IEST), Shibpur, CMPDI, Ranchi, Tata Consulting Engineers Ltd, Kolkata and NGRI, Hyderabad</p> <p>Objectives:</p> <ul style="list-style-type: none"> • To generate an accurate geological model of a study area with associated coal seams by 2D/3D seismic survey and acquisition of conventional surface / subsurface information and validation of the model by drilling core holes • To determine various in situ coal properties for coal characterization within the study area • To find out the in-situ gas content and establish adsorption isotherms for estimation of gas saturation • To calculate CBM reserve estimate by volumetric method followed by uncertainty • analysis by probabilistic method • To calibrate the information generated through the steps above by conducting flowing material balance and production decline curve analysis 	24.03.2014	23.03.2022	<p>2069.91</p> <p>IEST- 763.12</p> <p>NGRI- 457.06</p> <p>CMPDI - 592.73</p> <p>TCE - 257.00</p>

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2	<p>Capacity building for extraction of Coal Mine Methane (CMM) resource within CIL command areas</p> <p>[Project code: CE-32]</p> <p>Implementing Agency: CMPDI, Ranchi & Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia</p> <p>Objectives:</p> <ul style="list-style-type: none"> • To develop efficient and cost-effective methane capture technologies at a pre-selected field or mine site under Indian resource and mining conditions. • To develop advanced gas testing laboratory services and capabilities within CMPDI which may be replicated in at respective regional institutes of CMPDI associated with CIL subsidiaries. 	23.03.2016	22.06.2022	<p>2392.79</p> <p>CMPDI - 1492.72</p> <p>CSIRO- 900.07</p>

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3	<p>On-line coal dust suppression system for opencast mines [Project code: EE-47] Implementing Agency :Centre for Development of Advanced Computing (CDAC), Thiruvananthapuram & CMPDI, Ranchi Objectives:</p> <ul style="list-style-type: none"> • To identify air pollutants present in opencast coal mines and provide centralised online monitoring of inventory of the pollutants (PM₁₀, PM_{2.5}, SO₂, NO₂ and CO) based on National Ambient Air Quality Standard (NAAQS). • To develop an automatic dust suppression system for the dust generated during transportation activities in opencast coal mines for regulating the amount of particulate matter PM₁₀ and PM_{2.5} present in the air based on NAAQS standard by sprinkling of adequate quantity of water. 	23.03.2016	22.09.2021	<p>421.04 CMPDI-60.00 CDAC - 361.04</p>

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4.	<p>Indigenous development of early warning radar system for predicting failures/slope instabilities in open cast mines [Project code: MT-169] Implementing Agency: Society for Applied Microwave Electronics Engineering & Research (SAMEER), Mumbai, Armament Research & Development Establishment (ARDE), Pune, Centre of Studies in Resources Engineering (CSRE), Indian Institute of Technology (IIT), Mumbai and Central Mine Planning & Design Limited (CMPDI), Ranchi Objectives:</p> <ul style="list-style-type: none"> • To develop a prototype instrument of SSR system based on GB-SAR principle • To develop an Interferometric Information Generation System (IIGS) • To develop a Control Logic, Archiving and Prediction System (CLAPS) • To develop the Displacement Map Generation System (DMGS) of the SAR processed time series data 	01.02.2018	31.01.2022	<p>585.58 SAMEER - 520.58 CMPDI - 65.00</p>

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5.	<p>Design and Stability of Pillars/Arrays of Pillars for Different Mining Methods in Coal Mine Workings [Project code: MT-170] Implementing Agency: Central Institute of Mining and Fuel Research (CIMFR), Dhanbad, IIT-ISM, Dhanbad, CMPDI, Ranchi, South Eastern Coalfields Ltd. (SECL), Bilaspur, Bharat Coking Coal Ltd. (BCCL), Dhanbad and Singareni Collieries Co. Ltd. (SCCL), Kothagudem Objectives:</p> <ul style="list-style-type: none"> • Design and stability of pillars and arrays of pillars in coal mine workings includes: • estimation of load/stress on pillars for shallow as well as deeper horizons • estimation of pillar strength for deeper horizons • Development of guidelines to link (a) and by proper safety factor of pillars depending on mining methods and purposes. • To establish mode of failure (progressive or instantaneous nature) vis-à-vis squat pillar design. • Risk Assessment vis-à-vis parametric analysis with respect to pillar stability. will be useful for the other coalfields of India for the support design 	16.03.2018	15.10.2021	562.29 CIMFR- 299.37 IIT-ISM - 211.00 CMPDI-51.92

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6	<p>Reclamation of coal mined land of North Eastern Coalfields, Assam through soil amendment and revegetation with native plant species using integrated biological approach</p> <p>[Project code: EE-50] Implementing Agency: Rain Forest Research Institute (RFRI), Jorhat, & North Eastern Coalfields (NEC), Margherita</p> <p>Objectives:</p> <ul style="list-style-type: none"> • To rehabilitate degraded post mining land by soil amendments and revegetation with native plant species using integrated biological approach. 	27.03.2018	26.09.2021	83.18 RFRI - 83.18
7.	<p>Development and Field Trial of 500 T Capacity SAGES-III for Use with Continuous Miners (Phase-III)</p> <p>[Project code: MT-171] Implementing Agency: IIT-ISM, Dhanbad, SECL, Bilaspur, M/s Andhra Pradesh Heavy Machinery & Engineering Limited (APHMEL), Vijayawada and M/s Jaya Bharat Equipment Pvt. Ltd. (JBEPL), Hyderabad</p> <p>Objectives:</p> <ul style="list-style-type: none"> • To design, develop and manufacture of 4 nos. of 500 t capacity Self Advancing Goaf Edge Supports (SAGES) compatible with continuous miners in extraction of coal pillars and field trial of developed SAGES in depillaring operation with continuous miner at one of the underground mines of SECL • To study the techno-economic of deployed SAGES (500 T) with Continuous miner. 	01.05.2019	30.04.2022	396.69 IIT-ISM- 85.69 APHMEL- 311.00

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8.	<p>Indigenous Development of IoT Enabled Technology for Monitoring, Analysis and Interpretation of Longwall Shield Pressures for Improving Safety and Productivity</p> <p>[Project code: MT-172]</p> <p>Implementing Agency: CMPDI, Ranchi, IIT, Kharagpur & Eastern Coalfields Limited (ECL), Sanctoria</p> <p>Objectives:</p> <ul style="list-style-type: none"> Indigenous Development of IoT Enabled Technology for Monitoring, Analysis and Interpretation of Longwall Shield Pressures for Improving Safety and Productivity 	01.12.2020	30.11.2023	471.00 IIT-KGP: 367.16, CMPDI: 103.84, ECL: Nil
9.	<p>Assessment of Rare Earth Elements (REE) and other economic resources in Coal & Non-Coal Strata and Characterization of Acid Mine Drainage and its pollution control from the North Eastern Region (NER) Coalfield</p> <p>[Project code: EE-51]</p> <p>Implementing Agency: Panjab University, Chandigarh, CMPDI, Ranchi & Duke University, USA</p> <p>Objectives:</p> <ul style="list-style-type: none"> To assess all Rare Earth Elements (La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Em, Yb, Lu) and Sc, Y in Coal and Non-Coal strata and overburden in NE Region. 	01.12.2020	30.11.2022	361.38 Panjab University: 215.04, CMPDI: 103.84, Duke university: 42.50

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	<ul style="list-style-type: none"> • To assess other economic resources (Uranium, Thorium, Monazite sand, Rutile, Zircon etc) in Coal, Non-Coal strata and overburden dumps in NE Region. • To measure of major and trace elements of the acid mine drainage water samples; • To conduct sequential leaching experiment on coal and Coal Combustion Residual (CCR) to evaluate mechanism of mobilization of REE and associated CCRs. • To develop the most cost-effective remedial design through in-situ remediation processes as currently an emerging practice globally. 			

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10.	<p>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-ISM, Dhanbad and ECL, Sanctoria Objectives: To detect subsurface cavities or fire areas leading to potholing, sinking or sudden collapse of ground and also risk of inrush of water from water logged areas in the inaccessible / doubtful location of underground coal mines causing loss of lives, damage to surface structures, houses, roads etc. and also ascertaining its location using geo-physical methods</p>	15.03.2021	14.03.2023	<p style="text-align: center;">199.96 IIT-ISM: 199.96, ECL: Nil</p>
11.	<p>Design & Development of Drone Mounted Optical Sensor for continuous monitoring of PM_{2.5} & PM₁₀ in railway siding before, during & after loading operation [Project code: MT-174] Implementing Agency: IIT-BHU, Varanasi and NCL, Singrauli Objectives: To design and develop a device for real-time monitoring of PM_{2.5} & PM₁₀ concentration at railway siding before, during, and after loading of coal on rail wagons and to predict Air quality & measure the heat, humidity and pressure in a non-contact manner</p>	15.03.2021	14.09.2022	<p style="text-align: center;">36.84 IIT-BHU: 36.84, NCL: Nil</p>

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12.	<p>Development of Coal Quality Exploration Technique based on Convolutional Neural Network and Hyperspectral Images [Project code: CP-50] Implementing Agency: CIMFR, Nagpur and Department of Computer Science & Engineering, Shri Ramdeobaba College of Engineering & Management, Nagpur Objectives: To develop a new coal quality identification and classification equipment and a technique to predict coal quality data by using Hyper-spectral imaging</p>	15.03.2021	14.03.2022	<p style="text-align: center;">103.59 CIMFR, Nagpur: 23.30, Shri Ramdeobaba College of Engineering & Management, Nagpur: 80.29</p>
13.	<p>Establishment of Geo-thermal energy (20KW Cap) power generation Pilot Project at Manuguru area of SCCL Command area based on closed loop Binary Organic Rankine Cycle Process technology [Project code: CE-33] Implementing Agency: Singareni Collieries Company Ltd, Kothagudem and Shiram Institute for Industrial Research, New Delhi Objectives:</p> <ul style="list-style-type: none"> • To establish indigenous 20 KW first Pilot Demonstration unit in India based on closed loop Binary Organic Rankine Cycle (ORC) process technology to produce clean, reliable and efficient electricity using Geothermal fluid as heat source at Manuguru, Telangana. • To standardize and optimize the power generation cost using geothermal source independently or in combination to ensure uninterrupted power supply for commercial viability. • To indigenize the process and establish model for scaling up. 	01.06.2021	30.11.2022	<p style="text-align: center;">172.28</p>