CONSERVATION AND DEVELOPMENT OF TRANSPORT INFRASTRUCTURE

13 CHAPTER

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1. Coal Conservation

Conservation of coal is an important area, particularly when our Coal reserves are finite. The aspect of conservation of coal is considered right from the planning stage and maximum recovery is ensured during the implementation stage. Mines are designed to work the coal seams either through opencast or through underground methods depending on the technical feasibility and economic viability.

Mechanized opencast (OC) mining is presently the commonly adopted technology for extraction of thick seams at shallow depth. This is also important from the conservation point of view since the percentage recovery by this technology is around 80% to 90%. Presently, this technology dominates the coal industry contributing over 94% of country's coal production. Further, whenever it is feasible, the developed pillars of underground mines are also being extracted through opencast operations.

Introduction of new technologies like longwall method, shortwall method, highwall mining and Continuous Miner technology have resulted in increased percentage of extraction in underground mining (UG).

With the improvement in roof support technology with mechanized bolting and resin capsules, it has been possible to maintain wider gallery span and extract seams under bad roof conditions more efficiently resulting in improved conservation of Coal.

2. Sand Stowing

Sand stowing in underground mines is yet another effective means of coal conservation, which is widely in use for extraction of coal pillars from underground coal seams lying below built-up areas, such as important surface structures, railway lines, rivers, nallahs, etc. which otherwise would have resulted in locking of coal in pillars. Stowing also helps in the extraction of thick seams in several lifts increasing the percentage of extraction. Due to scarcity of sand, various experimental trials are being conducted to use other materials like fly ash, boiler ash, crushed overburden material, etc. for stowing in underground mines as substitute for sand. Currently, crushed overburden material is being used commercially for stowing purposes in underground coal mines where sand is not available in the near vicinity of the mine or it is costlier to transport sand from distant river sources.

3. Coal India Limited (CIL): Railway Infrastructures Projects

In order to achieve the planned growth in production and evacuation in future, CIL has undertaken the construction of major railway infrastructure projects. These railways infra projects are being implemented by either Indian Railways (on deposit basis) or through JV companies with IRCON representing Railways, subsidiary company (representing CIL) and concerned State Government. Two (02) major rail infrastructure projects being implemented on deposit basis and four (04) rail infrastructure projects being implemented by JV companies.

3.1 Deposit basis –

East Central Railway is executing the Tori Shivpur new BG line with a length of about 44.37 KM for North Karanpura Area of CCL, in Jharkhand. The doubling of the entire line was commissioned in Dec'19. Tripling of this rail line to enhance its capacity from ~ 65 MTPA to ~ 100 MTPA, has been commissioned and inaugurated by Hon'ble PM on 01.03.2024. All yard recodification works are

anticipated to be completed by January 2026.

South Eastern Railways, Kolkata has executed the Jharsuguda- Barpali- Sardega rail infrastructure project with a length of about 124 KM for IB Valley Coalfields of MCL situated in Sundargarh district of Odisha. This line was commissioned in April-2018. The doubling of this rail route with loading bulb at Barpali and remodelling of Jharsuguda yard including rail flyover complex shall enhance coal evacuation capacity of the railway line from ~ 34 MTPA to ~ 65 MTPA. Doubling of Jharsuguda-Barpali-Sardega Rail line has been commissioned and inaugurated by Hon'ble PM on 03.02.2024. Loading of Bulbs at Barapali and Flyover Complex at Jharsuguda by Railways is under process and it is anticipated to be commissioned by Dec'2026.

3.2 Joint Venture basis –

Jharkhand Central Railway Limited (JCRL) - Execution of Shivpur-Kathautia section with a length of 49.08 KM is being undertaken by a JV company named Jharkhand Central Railway Limited (JCRL) with CCL, IRCON and State Government of Jharkhand as its Partner. Financial Closure achieved in May'22. The project is under construction and the present progress is about 63.50 % and it is anticipated to be commissioned by June'2026.

Chhattisgarh East Rail Limited (CERL) – A JV company formed by SECL, IRCON and the State Government of Chhattisgarh, is executing the construction of East Rail Corridor, in two Phases:

Phase-I: Kharsia- Dharamjaigarh with spur to Gare Palma and three feeder lines of about 124.7 KM. The main rail corridor between Kharsia to Dharmajaigarh (74 KM), Spur Line between Gharghoda and Bhalumunda (13.873 KM and Feeder line to Chhal (8.429 KM) & Baroud (4.139 KM) have been commissioned and inaugurated by Hon'ble PM on 14.09.2023. Presently, coal evacuation through this new BG Railway line is being done. The remaining work of Spur line between Bhalumunda and Gare Pelma (17 KM) is under progress and anticipated to be commissioned by March, 2026 (except Durgapur Feeder Line).

Phase- II: Dharamjaigarh- Korba with a length of about 62.5 Km. Financial closure has been achieved on 28.08.2023. Presently, Land acquisition is under progress. Total involved Private land (290.698 Ha.) has been acquired. Tenders are being finalized by IRCON. The present progress is about 42.80% and it is anticipated to be commissioned by June'27.

Chhattisgarh East West Rail Limited (CEWRL) – A JV company formed by SECL, IRCON and the State Government of Chhattisgarh, is executing the construction of East – West Rail Corridor (Gevra Road to Pendra) via Dipka, Katghora, Sindurgarh and Pasan with a length of about 135 KM and Feeder lines of about 35 Km. This shall enable an evacuation of about 65 MTPA of coal from Korba Coalfields. Tenders for construction of rail lines have been awarded and construction is underway. The present progress is about 75.65% and it is anticipated to be commissioned by June, 2026.

Mahanadi Railway Limited (MCRL) - A JV company formed by MCL, IRCON and the State Government of Odisha, is executing the construction of Railway infrastructure projects in the Talcher coalfields of MCL, to cater to the evacuation of coal. Angul-Balaram- Jharpada- Tentuloi link at Talcher Coalfields of MCL with a length of 69.10 KM (which consists of the Jharpada- Kalinga- Angul link of 14.22 KM length). In the first phase, the Angul-Balram section, 14.22 Km has been commissioned. This has enabled an evacuation capacity of about 15 MTPA from Talcher coalfield.

In the second phase, Balram-Putagadia-Jarapada-Tentuloi Rail Line is planned to be constructed. The project has been taken up by Ministry of Railways.

3.3 First Mile Connectivity Projects:

CIL has planned total 92 First Mile Connectivity (FMC) projects for mechanized loading of coal. 20 projects were established prior to August 2019 having 151 MTY capacity. 72 projects having 843 MTY capacity were planned after August'2019. Out of these, 23 projects are commissioned till date, 23 projects are under construction/work awarded and 31 projects are under different stages of approval.

Thus, as on date, 43 FMC projects with 416 MTY capacity are commissioned and remaining projects will be commissioned by FY2028-29.

PM Gati Shakti Cell and its functionality:

PM launched Gati Shakti-Nation Master Plan for Infrastructure development in October 2021 with the objective to bring different Ministries together and for integrated planning and coordinated implementation of infrastructure connectivity Projects. It will incorporate the infrastructure schemes of various Ministries and State Governments and will also leverage technology extensively including spatial planning tools.

The Ministry of Coal has identified more than 100 data layers mapped along with attributes and metadata for planning and monitoring of infrastructure through PM GS-NMP portal. The data layers enhances the integrated planning process of the resources of related Ministries during the planning stage. The following activities are done so far regarding PMGS Master Plan in Coal Sector:

- GIS layers like Coalfield Boundaries, Coal /Lignite Blocks (CIL, CMSP, MMDR, SCCL, NLCIL), Coal Evacuation System, Location of Railway Siding, Location of CHPs, Location of Washeries under CIL, FMC Projects, Land Asset Data (Acquired land, Plots, Forest land, Non-Forest Land, Technical reclamation, Plantation, Mining Right Boundary), Coal Blocks under Auction, CBM Blocks, Borehole Locations, GSI Data, Drone Acquired Data & various tools for analytics etc.
- Publication of Booklet on 'PM Gati Shakti National Master Plan in Coal Sector'
- Standard Operating Procedure (SOP) for MOC page on PMGS-NMP was prepared and updated in June 2025.

The Ministry of Coal has used PMGS-NMP portal for resolving issues like alternate route of transmission line passing through Dhirauli Coal Block, alternate rail alignment of Pelma-Sardega and Tentuloi-Budhapunk lines to avoid overlapping with coal blocks etc.The Ministry also intends to build up the value chain of coal resource from exploration to planning and execution of coal sector projects through development of dashboards and applications on PM GatiShakti NMP platform and integrate with portal of the Ministry. Project Reports of Coal India Limited (CIL) are analysed based on available information on PMGS-NMP portal for integrated planning to boost coal production.

4. NLC India Limited: -

1. TALABIRA II & III OCP (20 MTPA): Coal production in Talabira II & III OCP commenced from 26.04.2020. Cumulative Coal production since inception till 30.11.2025 is 56.24 MT. Construction of CHP, Mechanised Conveyor System and Rapid Loading Silo are under the scope of MDO and is in progress.

2. Railway Siding (Talabira-II&III OCP): Talabira-II & III OCP, with a capacity of 20 MTPA, is being developed by NLCIL. Mining operations commenced on 11.12.2019 and coal production commenced on 26.04.2020. Currently, coal is transported by road to nearby private railway sidings for further transportation to Paradip port and onward dispatch to NTPL, Tuticorin.

The construction of the railway siding at Talabira-II & III OCP is in progress. After the commissioning of the railway siding, coal will be transported from the pithead coal stockyard to NTPL, Tuticorin, through various modes such as mechanized conveyor systems, rail, and sea, completely avoiding road transportation. The physical progress of the railway siding work is 68.3%.

3. PACHWARA SOUTH OCP (9 MTPA): Neyveli Uttar Pradesh Power Limited (NUPPL) a JV of M/s NLC India Limited and M/s Uttar Pradesh Rajya Vidyuth Utpadan Nigam Limited (UPRVUNL) is developing Pachwara South Coal Block of 9 MTPA, in Dumka district, Jharkhand. Coal production from Pachwara South OCP is expected to commence from the year 2025-26. In Pachwara coal field, there are three coal blocks namely Pachwara North, Central and South. West Bengal Power Development Corporation Limited (WBPDCL) and Punjab State Power Corporation

Limited (PSPCL) have been allotted the adjoining Pachwara North and Pachwara Central coal blocks respectively.

DEVELOPMENT OF RAIL INFRASTRUCTURE

Sl. No	Name of Project	Anticipated Timeline
1	Commencement of Coal Production	FY 2025-26
2	Alternate Railway Siding	FY 2025-26
3	Development of Rail Infrastructure	FY 2027-28

(a) ALTERNATE RAILWAY SIDING at KURVA RAILWAY STATION (PSCB)

i. In-Principle approval letter received from Howrah Division of Eastern Railway on 29.03.2023 for construction of Railway Siding at Kurva Railway Station, Dumka under GCT Policy.

ii. Work order issued to M/s RITES on 30.05.2023.

iii. LoA issued by M/s RITES for the following

- Kurva Railway siding civil Construction
- S & T and Electrification works
- Construction of in motion weigh bridge at Kurva Siding

iv. Final approval for construction of railway siding received from Eastern Railway, Howrah Division on 01.12.2023.

v. Construction work of Kurva Railway Siding is under progress.

vi. Tree felling permission in private land of Kurva Siding has been approved by DFO, Dumka on 16.10.2025. Tree felling work is under progress.

vii. Blanketing work and track laying work 800 mt completed, work is under progress.

viii. The Physical Progress of the railway siding work is 71%.

Name of the Project	Capital Cost (₹ Cr.)	Anticipated Timeline for completion
Kurva Railway Siding	80.17 (Cr.) (Excluding GST, Cess & LWC)	FY 2025-26

North Dhadu (Western Part) – 3MTPA

- The Vesting Order for North Dhadu (Western Part) was issued by MoC on 14.12.2023.
- M/s RITES was engaged on 11.10.2023 for preparation of the FSR, DPR, DE and PMC for the proposed NDWP Railway Siding, for which the Railways granted in-principle approval on 06.07.2024. The Final DPR with ESP was submitted to NLCIL and Railway Authorities on 05.09.2024. Railways accorded approval for the DPR and ESP on 23.06.2025 for the North Dhadu siding, after which NLCIL submitted the land plan on 28.07.2025. RITES updated the DPR on 29.08.2025 and submitted detailed engineering drawings for five minor bridges and three buildings on 07.10.2025 and re-submitted revised drawings on 25.11.2025. The NLCIL Board approved the DPR on 29.10.2025. M/s RITES issued LOA to M/s SS Solutions on 11.12.25 for Geotechnical Investigation of Railway Siding at NDWP.

Machhakata (revised) – 30MTPA & New Patrapara (South) – 12MTPA

- The Vesting Order for Machhakata (revised) and New Patrapara (South) issued by MoC on 05.09.202 & 04.02.2025 respectively.
- Work order issued to M/s RITES for preparation of FSR, DPR, DE and PMC for the commissioning of railway siding at Machhakata (Revised) Coal Mine and adjacent New Patrapara South Coal Mine" on 12.02.2025. FSR of Railway Siding was submitted to East Coast Railways by M/s RITES for obtaining 'In-Principle Approval'

on 23.09.2025.

5. SCCL- Sand Stowing

To protect important surface features like Public Buildings, Colonies, Rail lines, Public roads etc., underground Voids /goaf (after coal extraction) are filled up (stowed) with River sand. Due to the acute scarcity of sand, various experimental trials are being conducted to use other materials like Bottom Ash, Boiler Ash and crushed OverBurden material etc. for stowing in underground mines as a substitute for Sand in SCCL Mines.

Rail and Infrastructure Project for Coal Evacuation:

To ease the faster, safer and environmental free transportation of coal, 54 Km length new rail line costing 927.94 Crs is being constructed and connects Bhadrachalam Road to Sattupalli on deposit basis including stations Sarvaram, Chandrugonda & Pardhasaradhi Puram. Prime Minister Narendra Modi virtually inaugurated the new BG rail line from Ramagundam on 12.11.2022 to facilitate unconnected areas of Telangana and coal transportation.

Keeping in view of the planned enhancement of coal production and dispatch in next 5 five years, SCCL is taking following measures steps regarding coal evacuation and infrastructure are being taken by SCCL –

Coal Handling Plants (CHPs) : There are 10 nos. CHP and one Warf loading system with a cumulative capacity of 70.5 MT which dispatches by Rail / MGR systems. There are 10 nos. Pre-Weigh Wagon Loading systems and 19 nos. Pre-Weigh Truck Loading systems are installed & working at various Mines & Coal Handling Plants.

For Naini Coal block allotted to SCCL in Odisha, Phase- II of MCRL railway line of 68 KM is to be completed. Till completion of the MCRL railway line, SCCL is planning the various options by the Road/Rail mode on temporary basis.

In addition to the construction of the Railawy line, railway siding and Coal Handling Plant arrangements are being done for installation of Pre-Weigh Wagon Loading systems, crushers, and approach Road / BT Road/ Asphalt road: Roads for coal transportation is being constructed and maintained as per requirement.

First Mile Connectivity (FMC) Projects of SCCL: SCCL has constructed 12 FMC projects with capacity of 70 MTY . In additional, 3 projects with capacity of 21 MTPA are under various stage.

6. Koyla Shakti Dashboard

Ministry of Coal has launched Koyla Shakti Dashboard on 29.10.2025. Koyla Shakti is a flagship digital governance initiative, represents a major step toward creating a unified, real-time, analytics-driven ecosystem for India's coal sector. The dashboard integrates data across production, logistics, consumption, and sustainability, enabling transparent, efficient, and predictive oversight of the entire coal value chain.

This initiative reinforces **key Government missions –** including Digital India, National Logistics Policy, Aatmanirbhar Bharat, and data-driven infrastructure development.

Strategic Purpose: Koyla Shakti **addresses long-standing challenges** in coal logistics: fragmented data, limited visibility, high manual dependencies, and lack of synchronized planning across supply-chain nodes.

Unified Data Integration: It provides a **"One Nation, One Dashboard"** capability that integrates real-time data from **Coal Companies (PSUs & Allocated Blocks), Ministry of Railways, Ministry of Power, MoPSW, MoRTH, State Governments (E-Khanij)** and other key stakeholders. At present **50 APIs** have been successfully integrated.

Key Functional Capabilities:

I. Real-Time Monitoring & Visibility –

- Tracks production, dispatch, transportation, consumption, and stock levels across the value chain.
- Provides live rake/wagon visibility, highlighting delays and operational bottlenecks.

- Issues real-time alerts on disruptions and supply-chain delays.

II. Advanced Analytics & Forecasting

- Predictive models for demand forecasting, dispatch planning, and route optimization.
- Prescriptive analytics to support faster, better supply-chain decisions.

III. Standardization & Governance

- Uniform reporting metrics across Ministries/ Departments.
- Enhances coordination and benchmarking through shared performance indicators.
- Built on a scalable architecture that can integrate future datasets and new features.

7. Integrated Coal Logistic Plan and policy –

National Logistics Policy was launched by Hon'ble Prime Minister in September, 2022 with an objective to enhance logistics efficiency, reduce logistics cost and to improve the logistics performance of the country to be among top 25 nations of the world.

National Logistics Policy envisages, every sector of the economy to undertake an exercise to formulate "Sectoral Plan for Efficient Logistics" having Logistics cost as factor of infrastructure, cost in inventory, systems and regulations. National Master Plan envisages providing multi-model connectivity for various economic zones.

In the context of the coal sector, economic zones are coal mines on one end and the larger consumers including power plants, steel manufacturing units, steel, aluminum, fertilizer, Cement, manufacturing units etc. are on consumer end.

The Ministry of Coal has set a goal to produce 1.3 billion tonnes of domestic coal by FY2027 and 1.5 billion tonne by FY2030 to advance Atma-Nirbhar Bharat and increase India's energy security by substituting imported coal with locally mined coal. In view of projected coal demand, the existing evacuation infrastructure may not be adequate to optimally evacuate the projected coal demand and can pose a challenge. It was imperative to re-evaluate the existing logistics infrastructure available across all transportation modes of coal evacuation in an integrated manner and to plan for sustainable development of future infrastructure that leverages the strengths of different modes leading to optimized total logistics cost of coal movement at the National Level.

Accordingly, an extensive exercise has been undertaken for Origin-Destination study for freight movement of coal, based on the scientific data, congestion analysis was carried out and identification of railway infrastructural gaps for all the blocks currently in operation and also proposed to be operationalized for the peak production requirement of the country.

This exercise has been undertaken in close consultation with stakeholders Ministry of Steel, Ministry of Power, Ministry of Railways, Ministry of Road and Transport and Highways, Ministry of ports Shipping and Waterways, Niti Aayog and DPIIT.Based on this extensive exercise, M/o Railways & M/o Coal have jointly identified 38 critical infrastructure gap projects. Such projects have been incorporated in the Coal Logistics Action Plan.

Logistics Policy and Plan with a vision to develop technologically enabled, integrated, cost effective, resilient, sustainable and trusted logistics ecosystem for coal evacuation. This strategic framework aims to propel accelerated demand and supply of coal sector in FY2030. Coal Logistics Policy and Integrated Coal Action Plan was launched on 29.2.2024.

Outcome of this Integrated Coal Logistics Plan and policy will be as under-

a. Coal production of 1.5BT by FY2030

b. Developing infrastructure for 90% mechanized handling of coal.-with an integrated approach to eliminate road transportation of coal from mines and has initiated steps to upgrade mechanized coal transportation and loading systems under the 'First Mile Connectivity' projects.

Coal Handling Plants (CHPs) and SILOs with Rapid Loading Systems offer benefits such as coal crushing, sizing, and speedy computer-aided loading. In view of this, 139 FMC projects costing nearly Rs. 45000cr, capacity of 1319 MTPA are planned. Currently, 65 projects with a capacity of 552 MTPA have been commissioned. The remaining are scheduled to be commissioned by FY 2030

c. 33 critical gap railway projects have been identified. All these projects have been taken up by the M/o Railways in their long-term action plan

d. Additional Wagons requirement of 100000 has been projected to meet the coal evacuation requirement keeping in view of 86% rail evacuation of coal by FY2030. M/o Railways has undertaken the procurement of these wagons for coal evacuation.

e. Costal Movement of Coal: With a view to enhance the costal movement of coal from current level of 60 MT per annum to about 120 MT per annum, critical railway infrastructure gaps have been identified. This is primarily the Rail-Over-Rail at Cuttack and 4-lining of Cuttack-Paradip railway line. M/o Railways has included these in plan. Port Authorities of Paradip, Dhamra and Gangavaram port are also taking measures to enhance their coal handling capabilities.

f. Development of In-land Waterways: National Water Way – 5 in Brahmani and Mahanadi rivers have been identified for development. In-land Water Way Authority of India, Government of Odisha and Coal India ltd are forming a Special Purpose Vehicle (SPV) which will develop water way for transportation of coal from Talcher Coal Fields to Paradip port.

g. Smart Coal Analytics Dashboard- MOC developed smart coal analytics dashboard i.e. Koyla Shakti- centralized platform for real-time reporting and analytics on coal production, demand and logistics.

Impact of the Integrated Coal Logistics Plan and policy will be as under -

a. Increase Rail's share to 87% in FY30

b. Reduction in share of Road transportation

c. 14% reduction in Rail logistics cost

d. Cost Savings: Rs 21,000 Crores per annum

e. Lower Co2 Emissions by ~100,00 TonnesCo2 per Annum

f. 10% savings in average turn-around time