F. No. CPAM-55020/10/2020-CPIAM-Part(2) (iv)
Government of India
Ministry of Coal
(CPIAM Section)
***

Shastri Bhawan, New Delhi
Dated 29th June 2021

OFFICE MEMORANDUM

Subject: Seeking comments on Draft Transaction Structuring report under Common Use Infrastructure for Coal Evacuation submitted by SBICaps/Primus Partners -reg.

The undersigned is directed to enclose herewith the Draft Transaction Structuring Report under Common Use Infrastructure for Coal Evacuation submitted by SBICaps/ Primus Partners.

2. All stakeholders are requested to provide their comments on the above draft report to this Ministry within 30 days from the date ofplacing on the website of this Ministry at e-mail id: hitlar.singh85@nic.in. Comments received thereafter shall not be considered.

Encl.: As above.

(Hitlar Singh)
Under secretary to the Government of India
Email: hitlar.singh85@nic.in

To,

1. NIC - for placing on website of MoC for stakeholder consultation
2. All Stakeholders (CIL and its subsidiaries/SCCL/NLCIL/Captive block allocatees)

Transaction Structuring Report under Common Use Infrastructure for Coal Evacuation

Prepared for

कोयला मंत्रालय
Ministry of Coal

Ministry of Coal

Government of India

Advisors

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June 2022

IMPORTANT NOTICE

SBI Capital Markets Limited ('SBICAP') has been appointed by the Ministry of Coal ('MoC'' or 'Employer') as Transaction Advisor for monitoring of Coal Logistics Projects and other similar projects of Ministry of Coal ("Agreement"). The sole purpose of this Report on "Transaction Structuring Under Common Use Infrastructure for Coal Evacuation" is to assist the MoC in developing the efficient common use infrastructure for effective coal evacuation in India. The information contained herein may be subject to material update, revision, and further amendment. This Report on "Transaction Structuring under Common Use Infrastructure for Coal Evacuation" is not intended to form the basis for any investment decision.

The Transaction Structuring under Common Use Infrastructure for Coal Evacuation Report may contain/include certain estimates, projections, statements, targets, and forecasts. These reflect and are based on the various assumptions of the MoC and/or SBICAP; and the assumptions and the information on which they are based may or may not be accurate. Such forward-looking statements are not predictions and may be subject to change without notice. Actual results may differ materially from these forward-looking statements due to various factors. Past performance is not a guide for future performance. Neither SBICAP nor any of its affiliates, subsidiaries, advisors, directors, officers, employees, or agents make any representations and/or warranty in respect thereof and no reliance should be placed on any estimates, projections, statements, targets and forecasts or the assumptions on which they may be based.

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Transaction Structuring Under Common Use Infrastructure for Coal Evacuation Report have been expressed in good faith and are based on records/ information provided to us.

Each potential investor must conduct its own analysis of the information contained in the Transaction Structuring Under Common Use Infrastructure for Coal Evacuation Report and is advised to carry out its own investigation in relation to the business and operations of the MoC, the legislative and regulatory regime which applies to the MoC and any and all matters pertinent to the proposed commercial association and to seek its own professional advice on the legal, financial, accounting, regulatory and taxation consequences of entering into any agreement or arrangement relating to the MoC. Interested parties/potential investors should rely on their own judgment only, in assessing future business conditions and prospects of the MoC.

This Transaction Structuring Under Common Use Infrastructure for Coal Evacuation Report has been delivered to interested parties for information purposes only, without any regard to specific objectives, suitability, financial situations and needs of any particular person and does not constitute any recommendation and should not be construed as an offer to sell or the solicitation of an offer to buy, purchase or subscribe to any securities, if any, mentioned therein and neither this document nor anything contained herein will form the basis of or be relied upon in connection with any contract or commitment whatsoever.

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Contents

1 Introduction

Coal is an extremely important fuel and is expected to remain so. Globally, some 23% of primary energy needs are met by coal and 39% of electricity is generated from coal. About 70% of world steel production depends on coal feedstock.

The reasons for the importance of coal are that Coal is the world's most abundant fossil fuel source and is widely distributed, and economically recoverable reserves of coal are available in more than 70 countries worldwide, and in each major world region. Also, the wide availability of coal and the advanced stage and commoditization of coal mining make it a cheap resource.

Therefore, investment in coal infrastructure is pivotal for accelerated and inclusive socio-economic development of a country like India. With the advent of commercial coal mining, Indian Coal sector has witnessed a paradigm shift with opening up the sector for private players which was earlier dominated by Coal India Limited. With the emphasis of the Government on Atmanirbhar Bharat and goals to increase coal production to 1 BT by 2023-2024 there is a requirement of strengthening the existing infrastructure for seamless evacuation of coal. In the absence of adequate and robust infrastructure facilities, the economy operates at a sub-optimal level remaining distant from its potential and frontier growth trajectory and keeping in view of the same Ministry of Coal, Government of India has put major thrust on sustainable development in coal mining and is taking multi-pronged actions for evacuation of the Coal.

One of the options being explored to strengthen the coal evacuation infrastructure is common use infrastructure. “Common Use” relates to finding ways to leverage infrastructure investments in developing countries for the broader benefit of the relevant sectors and the nation. McKinsey Global institute found that resource-rich countries have infrastructure of a poorer quality than that in non-resource rich countries. This anomalous scenario causes a widening infrastructure gap at four times higher till 2030,

and 10% of the gap relates to mineral resources in these countries. The report further finds that a substantial portion of this gap is amenable to be addressed in multi-user and/or multi-purpose infrastructure.

Common Use can be considered multi-user, when several mining companies in a region use a particular infrastructure investment, or multi-purpose where non-mining users can also have access. Both models should be promoted, with a possibility of enhanced viability through lower per unit cost, increased production and evacuation, and higher tax revenues to the government.

If the potential of Common Use infrastructure is evaluated at the project design phase, the incremental capital cost on the economy and the environment could be minimised, and the beneficial impacts maximized. Private sector involvement is required to meet the vast infrastructure funding gap in developing countries, and Common Use infrastructure is an effective aid in this endeavour.

Common Use for railways, ports and roads is justified if:

- there are significant economies of scale or scope so that extra capacity is inexpensive and
- additional market exists at marginal cost.

There are many reasons why shared-use mining infrastructure is yet to fully realized:

- Mining firms control of infrastructure to gain competitive advantage
- Public authorities need systems and capacity to integrate proposed mining investments and shared-use infrastructure vehicles
- Investors have been slow to embrace infrastructure sharing since it has varied risk profile
- Development Finance Institutions have been slow to respond in this area since the projects may not come with sovereign guarantees

Mining is a competitive business, and fears of Common Use infrastructure should not be minimized. The commodity may have similar characteristics, and the decisions may be a

part of corporate level strategy rather than project specific discussions, and enclave and single use infrastructure can enhance the mining companies' monopoly power.

Most of the developed countries like Australia, Brazil, or Europe, where rail infrastructure is regulated, and necessary frameworks has been developed for efficient operations and utilization of rail assets for the public. However, in India there is no regulator and in the absence of same it becomes difficult to identify the transparent way of deciding on the various fees & charges related to passenger, cargo, etc. However, if public authorities are determined to implement Common Use, a suitable model of infrastructure concession can be designed to overcome these hurdles and align development to national plans and purposes. Therefore, in order to implement the common use infrastructure projects in India, a regulator will bring in required transparency and confidence. In the absence of the same, common infrastructure can be developed in the country through formation of a robust Model Concession Agreement addressing the critical risks association with the implementation and operation of the infrastructure and their potential mitigants with roles and responsibilities of each party clearly defined.

2 Common Use Infrastructure

2.1 The Case

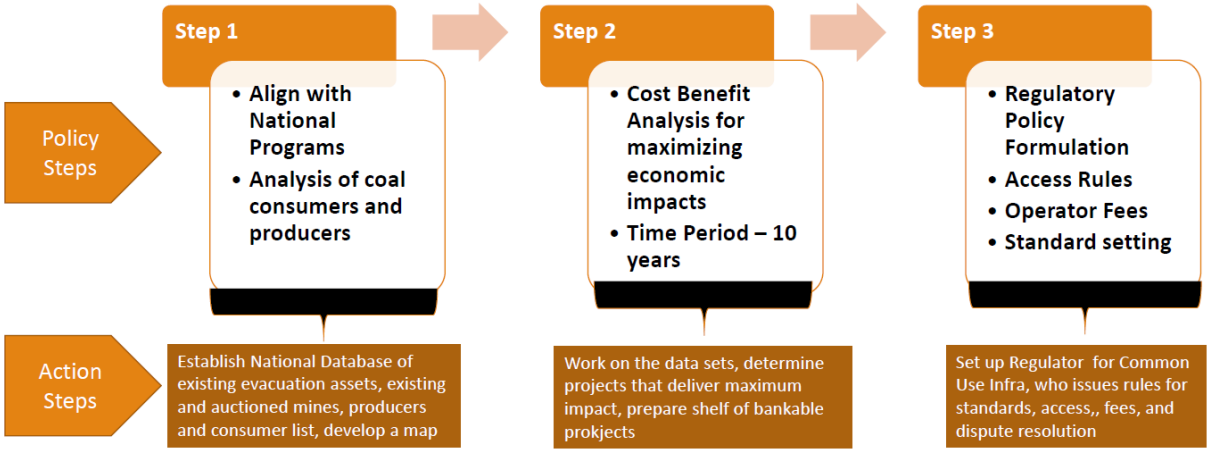
Increasing world demand for mineral resources has created renewed interest in mineral deposits. With limited financial capacity of governments, mining investors are today ready to fund the infrastructure, with transport costs at times being higher than the commodity cost. The anchor investors (whether leading mining company or a pure infrastructure developer) are willing to invest in the transport infrastructure and build rail and port capacity that will maximize profits. The economies of scale of rail and port infrastructure provide lower incremental cost for additional capacity than the construction of a new lines and ports.

From a government perspective, the suboptimal creation of infrastructure by separate users can be conceived as a case of market failure since separate infrastructure assets are usually less than fully utilized. In developing economies, this exacerbates the problem of gaps in infrastructure, with funding directed towards suboptimal investments, and higher per unit costs of production.

A well-designed and efficiently operated Common Use asset, that is available to all at a uniform price and service level, forces the mining companies to place more emphasis on efficient mining. The ability for market differentiation shifts from the ability to monopolize infrastructure assets to improving both quality and quantity of output in order to gain market advantages and maximize profit. With efficient, economical Common Use infra in place, miners can focus on their internal efficiencies to be competitive and profitable.

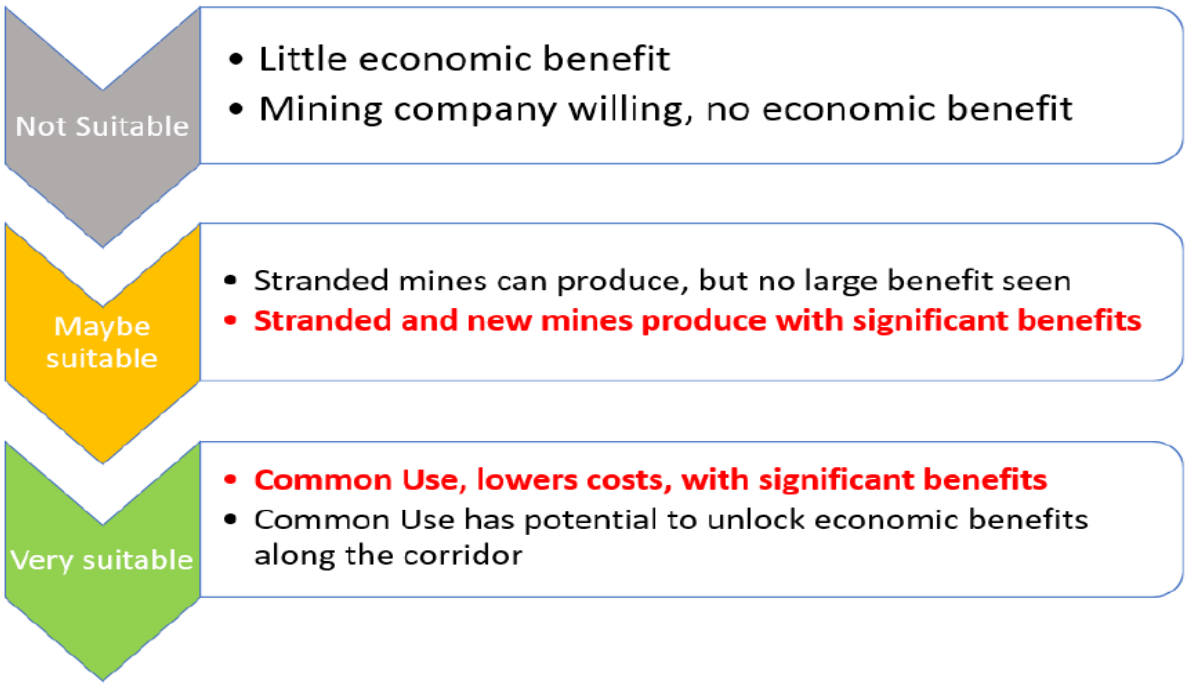
2.2 *Steps in setting up common use framework*

The below flowchart represents the steps in involved in setting up of the common use framework.



2.3 *Common Use Operational Models*

The operational model for Common Use infrastructure must be determined based on prevailing conditions. The pictogram below shows possible scenarios that may emerge:



In the India coal sector scenario, the scenarios shaded in red are the ones that will stand out for implementing Common Use policy and practice. The freshly auctioned mines can be mapped to potential scenarios where they can benefit from sharing infrastructure. The second case is also compelling where the use of shared assets lowers cost with increased production and reduced delays for all users and enhances economic impacts. The last scenario where the impacts are likely to benefit the whole corridor are not suggested at this stage because such project are likely to be sanctioned by Railways, NHAI, or Port authorities themselves as profitable ventures, or as part of national infrastructure pipeline.

2.4 Mining related infrastructure projects: Possible structures for common use infrastructure

The following table demarcates three possible structures for Common Use infrastructure:

Scenario	Preferred Operating Model	Regulatory Framework/ Government Intervention	Benefits	Risks	Key Regulatory considerations
Single mine, little foreseen economic benefit from open access	Vertically integrated model from mine to vessel	• Blanket or sector specific open access regimes • Non-interventionist	• Maximize efficiency of mining project and thereby government revenues	• Difficult to guarantee capacity and access to third parties in the future	• Access holidays with exclusive use of main user guaranteed • Open access guarantee after access holiday • Reserve right-of-way
Joint agreed investment by mining companies, foreseen benefit from open access restricted to mine owners	• SPV • Haulage regime	• Blanket or sector specific open access regimes • Non-interventionist • Government sanctioned rules and guidelines, reviewed periodically	• Maximize production and government revenues from mining sector in the region, smaller mines become viable	• Difficult to guarantee capacity and access to third non-financing parties in the future	• Access holidays • Open access guarantee after access holidays • Reserve right-of-way • Haulage regime by miner or third party
Potential to increase	• SPV or third party	• Blanket or sector specific	• Unlocking the mining	• Delay in negotiations	• Reserve right-of-way

Scenario	Preferred Operating Model	Regulatory Framework/ Government Intervention	Benefits	Risks	Key Regulatory considerations
production, stranded mining assets can restart, larger regional economic impact possible	operated infrastructure model (vertically separated) • Haulage regime or access regime	open access regimes • Equity or golden share of government • Independent regulatory body	potential of the region • Lower costs, benefits for economic development, higher government revenues, smaller mines become viable	with leading mining company • Difficulty to negotiate	• Cooperation among mining companies • Capacity for existing mining projects • Capacity for larger economic impacts

3 Probable Transaction Structuring Model for Common Use Rail & Road Infrastructure

3.1 Public Private Partnership (PPP)

In India, Public Private Partnership (PPP) has played the role of primary contributors in infrastructure in different areas like aviation, power/energy, and telecommunications. For past few decades, railway sector is increasingly employed by the PPP which was until now largely considered to be a public sector understanding. Thus, the idea of the Public Private Partnership was born to supply the services to the public at large.

A PPP could be defined as a 'joint venture' between the public and private sectors for the purpose of setting up and operation of vital infrastructure to ease the efficient delivery of the public services. [1] The PPPs main purpose is to "fill budget holes" [2] and "infrastructure deficit" [3] in public projects, providing alternative capital sources and making certainty of outcomes by delivering the projects on time.

3.2 Public Private Partnership (PPP): Contract Types

Most PPP projects present a contractual term between 20 and 30 years; others have shorter terms; and a few last longer than 30 years. The term should always be long enough for the private party to have an incentive to integrate service delivery costs considerations into the design phase of the project. This includes maintenance considerations as well, in order for the trade-offs between initial investment cost and future maintenance and operation costs to be optimized. The "whole-life" approach, considering whole-life costs and whole-life benefits, maximizes the efficiency of service delivery. It is at the core of the rationale for using PPPs for the delivery of public services. The precise length of the contract depends on the type of project and policy considerations. Policy makers need to satisfy themselves that the demand for the services

delivered by the project will be sustained over the whole life of the contract; the private party should be able to accept responsibility for service delivery over its term; and the procuring authority should be able to commit to the project for its term. The availability of finance, and its conditions, may also influence the term of the PPP contract.

A central characteristic of a PPP contract is that it bundles together multiple project phases or functions. Nonetheless, the functions for which the private party is responsible vary and depend on the type of asset and service involved. Typical functions include:

- **Design** (also called engineering work)—involves developing the project from initial concept and output requirements to construction-ready design specifications.
- **Build** —when PPPs are used for new infrastructure assets, they typically require the private party to construct the asset and install all equipment. Where PPPs involve existing assets, the private party may be responsible for rehabilitating or extending the asset.
- **Finance**—when a PPP includes building or rehabilitating the asset, the private party is typically also required to finance all or part of the necessary capital expenditure.
- **Maintain**—PPPs assign responsibility to the private party for maintaining an infrastructure asset to a specified standard over the life of the contract. This is a fundamental feature of PPP contracts.
- **Operate**—the operating responsibilities of the private party to a PPP can vary widely, depending on the nature of the underlying asset and associated service.

Table 1: Represents various models available under PPP route

Contract Type	Description	Suitable for
Build-Own-Operate-Transfer (BOOT)	A project delivery mechanism in which a government entity grants to a private sector party the right design, construct, own and operate a project for a specified number of years and transfer back the asset to the project owner after completion of concession period.	Rail connectivity, ports, iron ore/coal mines, cement cluster area etc.
Build-Own-Operate-Maintain Model (BOOM)	A project delivery mechanism in which the developer takes the risk of construction, operations, maintenance & revenue earnings of a project for a specified number of years.	Ideal for single user's facilities i.e., private rail sidings.
Annuity Model	Projects which have multiple beneficiaries and where it is not possible to define a separate revenue stream on the project line for the purpose of cashflow, can be picked up for annuity route. It is a cost recovery model through user's changes.	Doubling, third/fourth line, major bridges, tunnels, strengthening of existing line etc.

3.3 Implementation of the projects under PPP model

The private party typically creates a PPP company i.e., a Special Purpose Vehicle (SPV). A dedicated SPV allows for the segregation of all assets and liabilities linked to the private provision of services.

3.4 Payment mechanism under PPP model

The PPP payment mechanism is also an important feature of the PPP contracts. The private party can be paid by collecting fees from service users, by the government, or by a combination of the two—with the common, defining characteristic that payment is

contingent on performance. The options for a payment mechanism can depend on the functions of the private party:

- Under user-pays PPPs, such as toll roads, the private party provides a service to users, and generates revenue by charging users for that service. The payments may be conditional on the availability of the service at a defined quality level. The social returns generated by user-pays PPPs may benefit the broader population, not only those who directly use the asset.

- In government-pays PPPs, the government is the sole source of revenue for the private party. Government payments can depend on the asset or service being available at a contractually defined quality (availability payments).

3.5 Industry Best Practices for Common Use Infrastructure: Key projects implemented under PPP route for common use

3.5.1 Sarguja Rail Corridor Private Limited

Sarguja Rail Corridor Private Limited (SRCPL), a wholly owned subsidiary of Adani Rail Infra Private Limited (ARIPL), has implemented a project envisaging the construction of a ~75 Km private siding from the boundary of Parsa East and Kanta Basan coal blocks (PE & KB mines), located in Hasdeo Arand Coalfield in Sarguja district of Chhattisgarh, to the nearest IR line at Surajpur station in Chhattisgarh.

The Parsa East- Kente Basan block is located in Chhattisgarh and was awarded to RRVUNL in 2007. RRVUNL issued a tender seeking MDO services which was bagged by Adani Enterprises. The contract is executed by Adani Mining, a 100 percent subsidiary of Adani Enterprises. The block holds reserves of over 450 million tonnes of coal and will produce 2 million tonnes a year initially to be ramped to 15 million tonnes a year from 2017 onwards.

- *An important step in developing common use infrastructure for mining*

In 2008 Adani Enterprise Limited acquired a 30-year licence from Rajasthan Viduyt Udpadan Nigam Pvt Ltd (RVUNL) as a Mine Development Operator (MDO) for two coal blocks in Chhattisgarh for captive supply coal to captive power plants in Rajasthan. It is Responsible for setting up 75 kms rail infrastructure facility for transportation of coal from mine to the nearest rail head, RVUNL was to pay freight.

Ministry of Railways allowed rail connectivity as a Private Railway Siding, and Sarguja Rail Corridor Pvt Ltd (SRCPL), a private SPV negotiated a Take or Pay agreement with RVUNL.

The Chhattisgarh Govt facilitated land acquisition, SRCPL developed regional roads for coal transportation until the rail line was fully developed. SRCPL borne entire cost through Debt: Equity route, including cost of land and railway line. RVUNL allowed payment of "Track Access Charge" to SRCPL in addition to payment of minimum charges undertake or Pay.

- *Success Story*

In 2020-21, SRCPL carried more than 13 million ton of coal for RVUNL and SPV was valued at INR 5980 Cr and 2019-20, EBITDA was INR 385 Cr. SPV was further acquired and merged with Adani Port and Special Economic Zone (APSEZ).

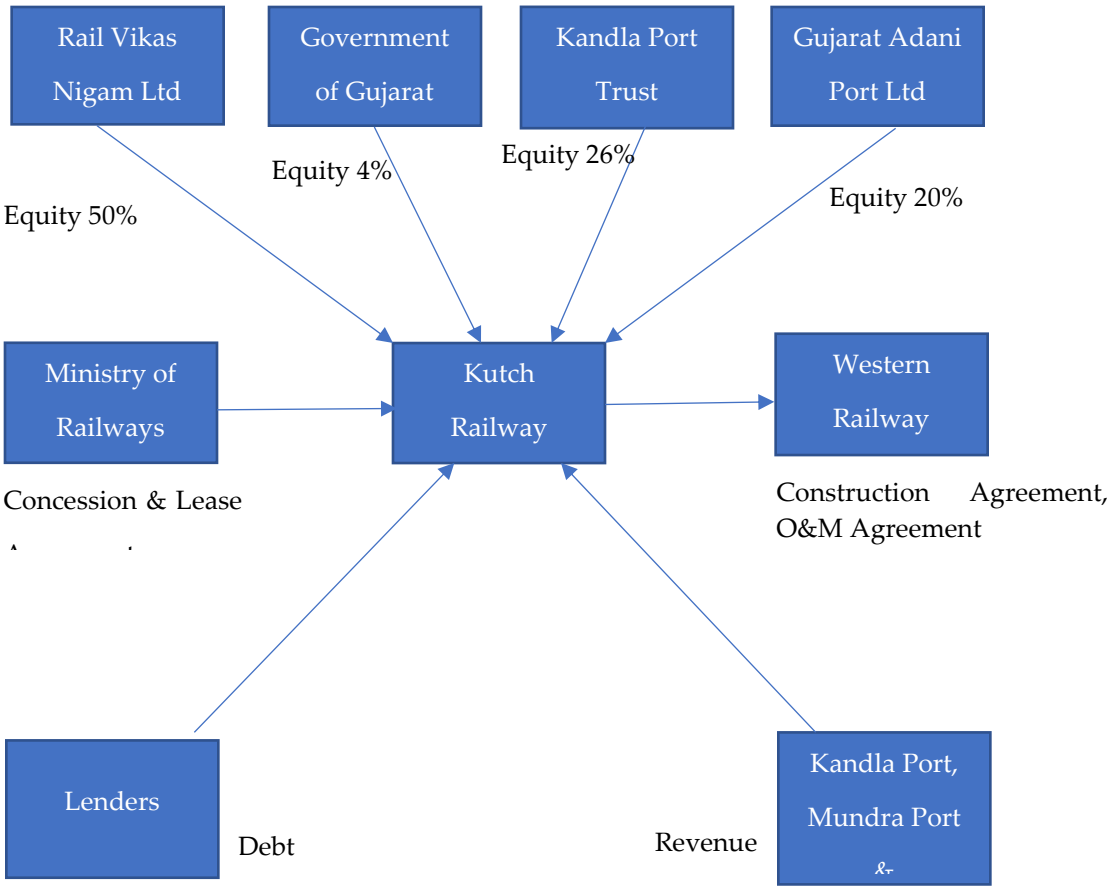
3.5.2 Kutch Railway Company Limited (KRCL)

Ministry of Railways decided to convert existing meter gauge line between Gandhidham and Palanpur (301 km). After Rail Vikas Nigam Ltd (RVVNL) (a PSU under Ministry of Railways) came into being, this project was transferred to RVNL for execution. RVNL set up a Special Purpose Vehicle for gauge conversion of Gandhidham-Palanpur and accordingly Kutch Railway Company was formed with equity contribution from RVNL, Deendayal Port Trust, Adani Ports & SEZ Ltd. and Govt. of Gujarat to undertake the gauge conversion of Gandhidham-Palanpur meter gauge of 301 km.

The SPV undertook the gauge conversion in two phases. While phase I of 248 Km was commissioned on 24th March, 2006, the remaining 53 km was executed in phase II, which was commissioned on 26th November, 2006.

KRCL is also providing direct rail connectivity to Kutch region thereby encouraging economic growth in the region. It has 33 stations and 2 halts. It is serving two very big ports in the state of Gujarat. Further, KRCL has three loading/unloading points - Santalpur, Adesar and Shamakhiyali and equipped with latest technology available for mechanized maintenance of P.Way and S&T equipment's and outsourced non-core activities to optimize cost of O&M in order to reduce the unit cost of operation.

- *Legal and Contractual Framework*



- *An important step in developing common use infrastructure for mining*

KRCL is an excellent model of public-private partnership which has proved to be a win-win situation, both for shareholders as well as the customers. While Indian Railways got a line in such a short time from the development date of 16th December, 2005 i.e. phase I commissioned on 24th March, 2006 and Phase II commissioned on 26th November, 2006 and provided a vital link between the ports in Gujarat and northern hinterland, other shareholders such as Deendayal Port and APSEZ, and Govt. of Gujarat have got

tremendous advantage of getting fast rail connectivity, which will help growing their business. Rail customers have got a shorter and much faster route which provides them savings in freight. Company has been able to effectively control the project cost from Rs. 550 Crores to Rs. 500 Crores and commissioned the project successfully ahead of time.
Further, it is capable to operate double stack 9'6" ISO containers over its territory from Palanpur to Gandhidham as KRCL has removed all the infringements for running of Double Decker Container trains which will carry 180 containers instead of 90 per train which would save huge cost to the railways as well as the customers.

- *Success Story*

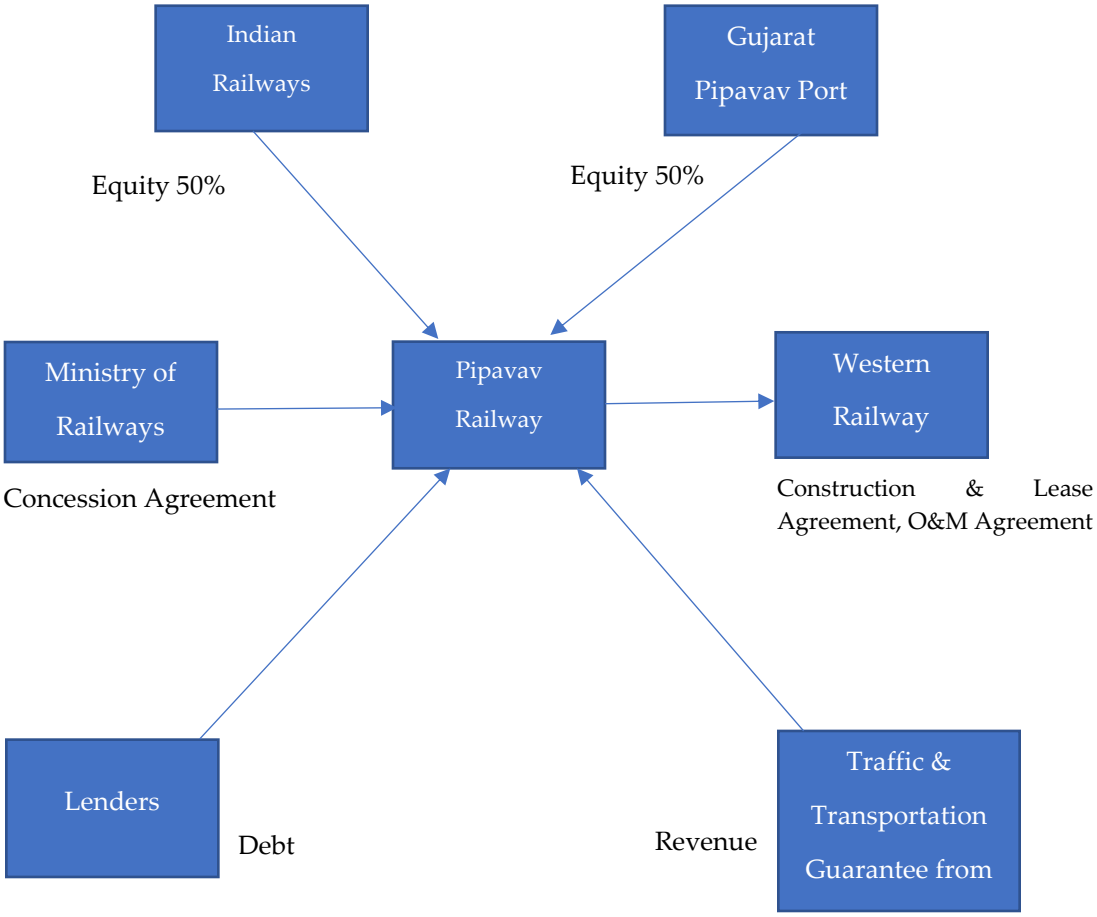
KRCL is one of the first private sector initiatives in the Rail sector in India, which is set up to convert 301 km meter gauge line from Palanpur to Gandhidham in state of Gujarat. Further, the Company has reported income of Rs. 1473.86 crore in the Financial Year 2020-21 and the company has a credit rating of "[ICRA] A" Stable.

3.5.3 Pipavav Railway Corporation Limited (PRCL)

In 1992, on Sea King Infrastructure Ltd.'s initiatives in the development of ports a Memorandum of Understanding was signed with the Gujarat Maritime Board and Government of Gujarat, to form Gujarat Pipavav Port Ltd (GPPL). The Port of Pipavav was developed as the first private port in India with world-class facilities, like mechanized cargo handling and day-and-night navigation system. It came into being as a deep draught all weather port in the Amreli district of Gujarat, India.
Pipavav Railway Corporation limited (PRCL) was set up in May 2000 under Companies Act, 1956, as a Joint Venture Company with Indian Railways and Gujarat Pipavav Port limited (GPPL) under a Shareholder's Agreement having 50% equity participation of each party. PRCL is the unique example of Public-Private Participation (PPP) in the development of infrastructure.

The PRCL was assigned the task of conversion of meter gauge line between Surendranagar and Rajula City to broad gauge and its further extension to Pipavav Port. The company is also entrusted the task of managing all operations and commercial functions in connection with the carriage of freight traffic on the 271 km PIPAVAV RAILWAY connecting port of Pipavav.

- *Legal and Contractual Framework*



- *An important step in developing common use infrastructure for mining*

PRCL was assigned the task of conversion of meter gauge line between Surendra Nagar and Rajula City to broad gauge and its further extension to Pipavav Port. The company was also entrusted the task of managing all operations and commercial functions in connection with the carriage of freight traffic on the 271 km Pipavav railway connecting port of Pipavav.

It is first Non-Government Railway having the status of a Railway Administration, under Railway Act 1989.

- *Success Story*

The company has reported Total Traffic movement (including Port & Non-Port) of 8.15 million tonnes in FY 2019-2020 with annual revenue of Rs. 229.65 Crore.

Further, Pipavav Rail Corporation Ltd (PRCL) has also commenced its independent container train operation in India with the launch of a direct container train service to Jodhpur Inland Container Depot (ICD) on the electrified route in the year 2021.

4 Common Use Infrastructure: A Case of Australian Railways

4.1 Introduction

Department of Infrastructure, Transport, Regional Development and Communications, Government of Australia, assists the Government to manage its rail investments and to oversee the Australian Rail Track Corporation (ARTC). The department also assists the government, working collaboratively with states and territories on an agreed national model for rail safety legislation and associated regulations.

ARTC was established in 1998 as the entity to manage the granting of access to rail operators to the Interstate Rail Network. ARTC was created with an objective to create a single process of access to the Interstate Rail Network consistent with the Competition Principles Agreement and the National Rail Summit Heads of Agreement.

Australia Competition and Consumer Commission (ACCC) is the National Regulator for various services including operations of private freight and passenger services on national network. In each State, there is a separate regulatory body, who decides on such matters in their respective State, under broad guidelines of ACCC.

The Access Undertaking executed by ARTC in favour of ACCC provides for the negotiations of Access required for the operation of Train Services by Operators on the Network, with details of the specified services and sections of the Network defined during Access negotiations. Access will include, in addition to the track, the benefit of Associated Facilities required to facilitate such Access.

The Undertaking provide a framework to manage negotiations with Applicants for Access to the Network for the purpose of operating Services; establish a workable, open, non-discriminatory, efficient, and inclusive process for lodging and processing Access Applications; use transparent and detailed methodologies, principles, and processes for determining access revenue limits, terms, and conditions.

(i) the term of the Access Agreement.

(ii) the potential for growth of the business;

(iii) the opportunity costs to ARTC;

(iv) the consumption of ARTC's resources, including capacity of network;

(v) the credit risk associated with the business;

(vi) the market value of the sought Train Path (to be operated by the accredited train operator company under the safety laws of the states where the line is located);

(vii) the Segments of the Network relevant to the Access being sought; and

previously negotiated Charges agreed under the terms of this Undertaking, where relevant, as published by ARTC as set out in clause 2.7(b);

There are Ceiling and Floor Limits on the revenue to be earned in a line segment. The overarching objective is to optimize the costs and benefits amongst the stakeholders. There are different rates of depreciation and accounting treatment for different cost items, based on those costs being the Segment Costs (related to a particular network segment) and Non-Segment Costs (which could not be related to any particular segment of the rail stretch). The Floor Limit means revenue for ARTC sufficient to cover the incremental cost of that segment or group of segments. The Ceiling Limit means revenue sufficient to cover the Economic Cost (direct segment specific costs, depreciation of assets, return on segment specific assets at a real rate of return to cover WACC, allocation of non-segment costs with depreciation and return, any similar costs pertaining to additional capacity) of that segment or group of segments.

Access charges will comprise of:

(i) a variable component, which is a function of distance and gross mass; and

(ii) a flag fall component, which is fixed and specific to each train service type and rail segment,

(iii) an excess network occupancy component, which is a function of time sought by an applicant for a Train Path on the Network, which is in excess of:

- reasonable allowance for section run times for the applicable train service type as determined by ARTC;
- dwells for crossing and passing other trains as determined and made available by ARTC for the train path; and
- an allowance for the reasonable requirements for operational activities whilst the train occupies the network.

The capacity analysis and capacity allocation are done based on the requirements of the users, and there is allowance for variation to account for (i) addition of more users, (ii) variation in usage requirements of existing users.

Any additional extension in line length/ connection to a different network etc. are done based on specific users bearing additional lump sum charges, who have requested for such change, and are done upon industry/ user consultations.

4.2 Haulage Charges: Modalities Adopted in Queensland State

Queensland Competition Authority (QCA) is the Regulatory Body in the state of Queensland to determine the Track Access Charge on various public/private rail networks in the State, which works under the broad guidelines of ACCC.

It enables the rail networks to work on the principle of "Open Access" and allow the rail operators to use the network in a transparent and judicious manner. QCA, every four years, sets out the Access Undertaking and specifies Terms and Conditions for providing access to users with a provision of dispute resolution among the parties. In February 2019, QCA has issued fifth Access Undertaking, which came into effect from July 2017 and shall be valid until June 2027 to set out the Terms and Conditions under which the Rail Network provides Access on its Rail Infrastructure.

Access seeker/ users can lodge a complaint with QCA if Rail Infrastructure Manager (RIM) and the rail operators fails to comply the provisions of the Access Undertaking.

4.3 Determination of user charges

The principles of Track Access are based on a recovery of Maximum Allowable Revenue (MAR) from all train services, which are expected to run on a particular section of the rail network in a given time. MAR is determined based on the Cost of Capital, Operations & Maintenance plus a reasonable return for any given financial year. The MAR is fixed so that the Net Present Value of the cash flow associated with providing Access for a relevant train service over the evaluation period is Zero.

For every 4-year period, QCA seeks detailed proposal on MAR from the rail network authority which is circulated among the Stakeholders and debated before it is finally agreed. RIM seeks requests from all users about the track capacity they want to commit in terms of tonnage per annum, along with types of trains services, commodities, their net and gross weight, etc. Also, RIM specifies the broad schedule of dimensions for trains, axle loads, wagons, locos, etc. for the particular section.

Access Seeker negotiates the Access agreements with RIM in accordance with Access Undertakings. The Access charges for a train service is based on following five elements, which are used to calculate the "Reference Tariff" for the particular train service:

a) AT1: An incremental maintenance cost component is levied on a gross ton km basis of a train;
b) AT2: Capacity component is levied on a Train Path basis, each way;
c) AT3: A component of allocated tariff is levied on a net ton km basis;
d) AT4: A component of allocated tariff is levied on a net ton basis;
e) AT5: A component of Electric Access Tariff (fixed cost) is levied on egtkm basis;
f) Electric Energy Charge tariff is levied on egtkm basis; and
g) Regulator's levy, on a Net Ton basis, to recover the cost of regulator's office

The RIM must declare an Assets Base, which is capitalized, and "Weighted Average Cost of Capital" (WACC) is determined by the regulator. The Assets base register has the book value of all assets and the new capital expenditure planned to be incurred for a given year.

Value of WACC is based on value of all capital cost, including cost of equity, cost of debt, bonds, corporate tax, etc. is considered while approving WACC. RIM maintains a Capacity Notification Register, under which Network Owner confirms the allocated capacity to various access seekers for a given period. Access Rights are transferable on payment of some fee and other committed capacity charges.

Calculation of "Reference Tariff" of each type of train service is the sum of the following:

a) Value of AT1 X gtkm/1000

b) Value of AT2 X number of train paths each way

c) Value of AT3 X ntkm/1000

d) Value of AT4 X nt

e) Value of AT5 X egtkm/1000

f) Value of Electric Charge X egtkm/1000

g) Regulator's levy X nt

Values of units for the year 2019-20 is then notified by RIM for all their networks.

4.4 Provision of Track Access Charges

For a given year, based on the capacity register, RIM calculates the following:

- Number of train services each way.
- Gtkm earned by all the services;
- Ntkms earned by all the services; and
- Net ton from all the services.

RIM applied the units to determine revenue under each Head above and match with the Maximum Allowable Revenue and then readjust the values in order to recover the cost along with agreed percentage on WACC as cost to Capital to RIM.

The values of AT1 to AT4 are different for each loading point and are based on various inputs, such as commodity type, loading time, train length and type, axle load, speed, etc. RIM based on the capacity register notifies daily trains plan (DTP), monthly train plan (MTP) and annual train plan (ATP) and allocate train paths for every operator under Take or Pay.

RIM under the Access agreements specifies various conditions of train operations, such as schedule paths, fee for cancellation, variations in types of services, etc., and the whole system is based on transparent and collaborate approach.

4.5 Key take-aways from the case of Australian Railways and its impact on Indian Railway's system for common use infrastructure

(a) The freight transport in Australia is a highly regulated affair, overseen by respective state regulatory bodies, with ACCC providing the overarching framework.

(b) The identification of various types of costs related to a particular rail network segment of any common use infrastructure can be done in a systematic manner. Hence, computation of user charges which may be attributable to individual users is fair and transparent.

(c) The computation of freight cost in the Indian railway system is pooled cost plus model and dependent on other social obligations of Indian railways.

(d) Development of independent transaction structures, together with independent authority/regulator is key to successful implementation of common use infrastructure and fair determination of user charges.

5 Common Use Infrastructure: A case of Carajas Corridor in Brazil

5.1 Introduction

Following the discovery of the Carajás iron ore reserves in 1967, the Brazilian federal government recognised their development as critical to its strategy of developing the region through extractive, agricultural, and industrial operations, as well as drawing migrants.

Companhia Vale do Rio Doce (Vale), a Brazilian state-owned mining firm at the time, was tasked with not only profitably extracting and exporting iron ore from Carajás, but also with assisting the government in achieving its economic and social objectives.

The company constructed the 892-kilometer-long Carajás Railroad (EFC) to connect Parauapebas (in the interior of Brazil's northern state of Pará), where the iron ore mines are located, to Ponta da Madeira in So Marcos Bay, in So Luis (capital of Brazil's northeastern state of Maranho), where Vale constructed the Ponta da Madeira Maritime Terminal, a private seaport. Along with moving iron ore from the mines to the port, the railway was built to accommodate passengers and other freight.

Vale constructed railway, seaport, airport, and telecommunications infrastructure in the Carajás corridor to support its regional mining operations. Apart from its primary use in those operations, the infrastructure has the potential to benefit third-party users and local communities via shared-use options. The shared infrastructure is outlined in greater detail below.:

1. Carajás Railroad is a safe, efficient, and dependable form of travel that connects low-income towns to long-distance passenger services.

2. Third-party general cargo services on the Carajás Railroad enhance exports of soybeans, soybean meal, corn, pulp, and pig iron, particularly through its link to the North–South Railroad (FNS) at Açailândia (owned by VLI, a subsidiary of Vale).
3. The 2.34-kilometer combined road–rail bridge over the Tocantins River lowers logistical costs in the Marabá region.
4. The Itaqui port complex benefits from investments in port infrastructure, including VLI's general cargo pier and Vale's signalling and dredging of the navigation channel.

The development of ICT infrastructure, such as fiber-optic cables along the Carajás Railroad and Vale's private 4G/LTE network, reduces the cost of providing Internet and cellular services.

5.2 Rationale behind Shared use infrastructure

From the government perspective, shared-use arrangements have the potential to enable the development of additional mining projects that would be unviable without access to the infrastructure, as well as the development of other economic activities and the provision of services to the communities along a mining corridor.

Additionally, as compared to duplicative infrastructure expenditures by numerous mining businesses or by the mining company and the government, shared-use infrastructure investments can help lower the environmental imprint.

Infrastructure projects with a larger capacity are also less expensive than duplicative investments due to economies of scale.

The 998-kilometer double-track mine-to-port Carajás Railroad (EFC) has established a secure, efficient, and reliable route of passenger and cargo transit in a rural region of Brazil previously served by a sparse network of poor-quality roads.

5.3 Benefits from the Shared use infrastructure by the region

1. Shared-use benefits from Vale's investments in port infrastructure for its private maritime terminal at Ponta da Madeira, including the general cargo pier now operated by VLI and Vale's signalling and dredging of the navigation channel, have also contributed to the Itaqui port complex and its immediate vicinity's strength as an export outlet.
2. The fiber-optic cables that telecoms providers installed along the EFC on Vale's right of way have significantly reduced the cost of pioneering access to ICT infrastructure for telephone services and Internet connectivity across the corridor's vast and sparsely populated region of influence.
3. Socioeconomic indicators in municipalities along the Carajás corridor are greater than in municipalities outside the corridor in Maranho and Pará, attesting to the development benefits provided by the logistical corridor and its shared use.

5.4 Reason for success of shared use infrastructure

1. The corridor was always intended to be a part of a wider national railway network design that included coordinated investment.
2. Stringent legal provisions governing shared use—contained in federal laws and decrees, railway concession and sub-concession agreements, and other rules issued and enforced by pertinent regulatory agencies, as well as private contracts—have ensured that even after the privatization of Vale, passenger and general cargo services continue to operate on the EFC and that the ICT infrastructure continues to be maintained and further developed along the corridor.
3. The access charge structure is public, and the national land transportation regulatory authority, ANTT, is mandated to mediate and act in the event that private parties are unable to agree on shared use.
4. On the Carajás corridor, contractual agreements with Vale's subsidiary VLI, which was established to manage third-party freight, have assisted in avoiding a potential conflict of interest that could have resulted in Vale abusing its monopoly position. While Vale remains a shareholder in VLI, the company is contractually obligated to allow VLI to manage freight on the EFC in accordance with pre-agreed throughput quotas. Vale must pay penalties if these are not reached, which decreases the incentive for Vale to prioritize its own cargo.

6 Common Use Infrastructure: A Case of Telecom Sector in India

6.1 Introduction

Telecom, as a capital-intensive industry, requires massive investment year after year for growth and expansion. A major issue that policy makers face is how to reduce entry barriers, increase competition in the market and avoid duplication of capital assets.

The basic motive of infrastructure sharing is to reduce the costs of building, operating, and maintaining network infrastructure. In theory, this is expected to encourage the entry of competition into the market.

There are two types of sharing in telecom:

1. Passive
2. Active.

Passive infrastructure sharing is where non-electronic infrastructure at a cell site, such as power supply and management system, and physical elements such backhaul transport networks are shared. Passive infrastructure sharing is the simplest enables operators to easily share sites and maintain their strategic competitiveness. However, the cost-saving potential of sharing is limited.

Active infrastructure sharing is sharing of electronic infrastructure of the network including radio access network (consists of antennas/transceivers, base station, backhaul networks and controllers) and core network (servers and core network functionalities).

The cost-saving potential is greater than passive sharing. Active sharing enables greater cost-saving potential but is complicated to operate and to maintain strategic differentiation. It is important to note that active network sharing has not been popular and only a few cases have been suspected to be so.

By sharing infrastructure, telecom tower sites can host active network components from many telecom service providers. Tower infrastructure companies provide an Integrated Neutral Host Platform to a diverse and frequently competitive collection of operators, enabling them in developing a distinctive, scalable, and successful telecom business model. This method distributes telecom infrastructure to operators in a non-discriminatory, transparent, and cost-effective manner.

6.2 Example in India

Indus Towers Limited is an independently managed company offering passive infrastructure services to telecom operators and other wireless services providers such as broadband service providers. The company was incorporated in November 2006.

Indus Towers was established as a joint venture involving three of India's largest telecom corporations at the time: Bharti Infratel Ltd, Vodafone Essar Ltd, and Aditya Birla Telecom Ltd.

At the present time, Indus Towers Limited is a joint venture between Bharti Group entities including Bharti Infratel (which provides telecom and tower infrastructure services in India under the brand names Airtel and Bharti Infratel Limited, respectively) and Vodafone Idea Limited (which provides telecom services under the brand names Vodafone and Idea). The joint venture is focused on providing passive infrastructure services to telecom service providers.

Its objective is to provide non-discriminatory access to shared telecom infrastructure for telecom providers.

6.3 Financial Structure

Bharti Infratel and Vodafone Group announced the merger of Bharti Infratel and Indus Towers on 25 April 2018, creating the world's second largest telecom tower provider. Bharti Infratel exchanged 1,565 of its own shares for each Indus Towers share valued at $10 billion under the terms of the transaction. Other significant shareholders in Indus

Towers, such as Idea Cellular and Providence Equity Partners, were given the opportunity to exit.

Bharti Airtel, Bharti Infratel's parent firm, owns the majority of the newly amalgamated entity. Prior to the merger, Bharti Infratel (42%), Vodafone Group (42%), Idea Cellular (11.55%), and Providence Equity Partners held shares in Indus Towers (4.85 %).

With approximately 172,094 towers and 314,106 co-locations across India's 22 telecom circles, Indus Towers Limited has the broadest coverage in the country and has already attained 288,013 tenancies, a first in the telecom tower sector internationally.

6.4 Significance

Indus Towers Ltd. is one of the largest telecom tower firms in the world. Airtel, Bharti Hexacom, Vodafone Idea Limited, and Reliance Jio are among its significant customers.

7 Proposed Transaction Structuring for Shared Rail & Road Infrastructure for Coal Evacuation from Talcher Coalfield

7.1 Background

Odisha is a state rich in mineral resources, with coal being most significant mineral. Odisha is bordered on the north by West Bengal and Jharkhand, on the west by Chhattisgarh, and on the south by Andhra Pradesh. Major cities of Odisha are well connected to all the major cities of India by railway lines. In the state of Odisha, there are two coalfields namely Talcher coalfield and IB Valley coalfield.

Along the Bay of Bengal, state has nearly 485-kilometer coastline. Odisha has one major port at Paradip. It is the second largest major port of India. Other ports in the state are Dhamra and Gopalpur port.

National Highway 53 connects Gujarat to Sambalpur and terminates at Paradip Port. Most of the railway network in Odisha lies under the jurisdiction of the East Coast Railway (ECoR) with headquarters at Bhubaneswar and some parts under South Eastern Railway and South East Central Railway.

Talcher Coalfield

Area: 1800 sq. km.
Latitude: 20° 53'00" to 21° 12' 00" North
Longitude: 84°20'00 " to 85°23'00 " East.

Talcher coalfield is strategically placed to deliver power quality coal to other parts of the India, particularly power plants in southern and western side of country. Major part of the coalfield falls in Angul district and remaining part is spreading over neighboring districts of Dhenkanal, Deogarh and Sambalpur within the state of Odisha.

It occupies a basin in the south-eastern part of the Mahanadi Valley belt of Gondwana Basin and covers an area of about 1800 sq.kms coalfield is close to the Cuttack-Sambalpur railway line, which is connected to the Howrah-Chennai and Howrah-Mumbai lines.

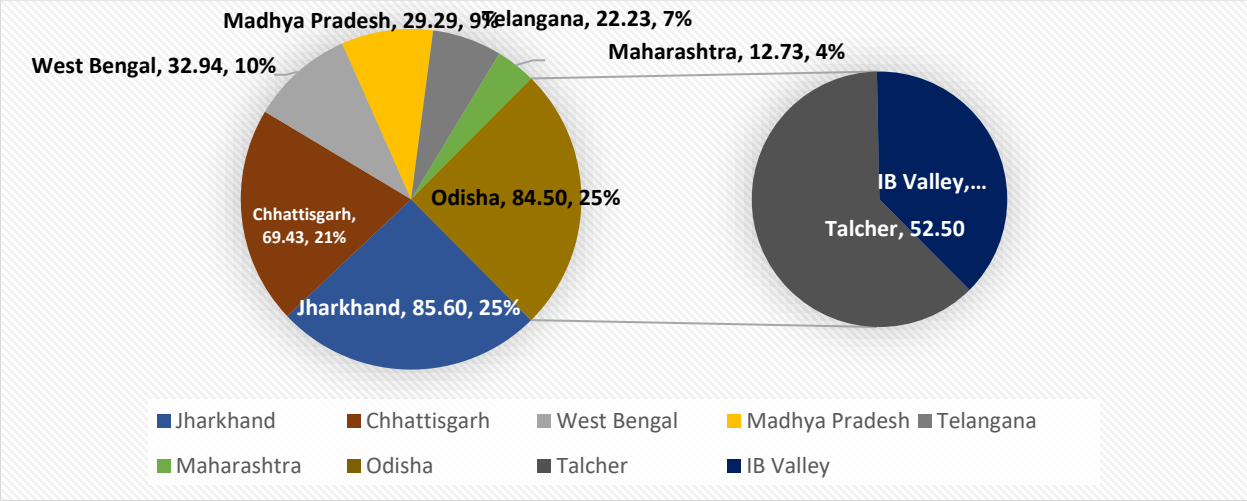
Paradip port is about 192 kilometers east. Talcher and Paradip is connected by railway via Cuttack. Another major port which is connected to Talcher is the Dhamra port. The coalfield is also advantageously positioned for consumers in southern and western India, where coal may be transported by rail or rail-plus-sea.

Geological Reserve

According to GSI resources compilation, in situ geological resources of coal as on 1st April 2020 in India up to a depth of 1200 meters is 344.02 Billion Tonnes (BT). This includes proved, indicated and inferred resources. Of these about 97.92% of resources i.e. 336.86 BT is shared by seven states1.

Talcher coalfield is known for hosting the largest source of power grade coal in India. As per the exploration carried out by various agencies, viz. Geological Survey of India (GSI), Indian Bureau of Mines, National Coal Development Corporation (NCDC), erstwhile Central Mine Planning & Design Institute Limited (CMPDIL), Directorate of Geology and Mines (DGM), erstwhile Odisha and Mineral Exploration Corporation Limited (MECL), establishes that Talcher coalfield has the largest reserves of coal in amongst all the coalfields of India.

State-wise Geological Reserves

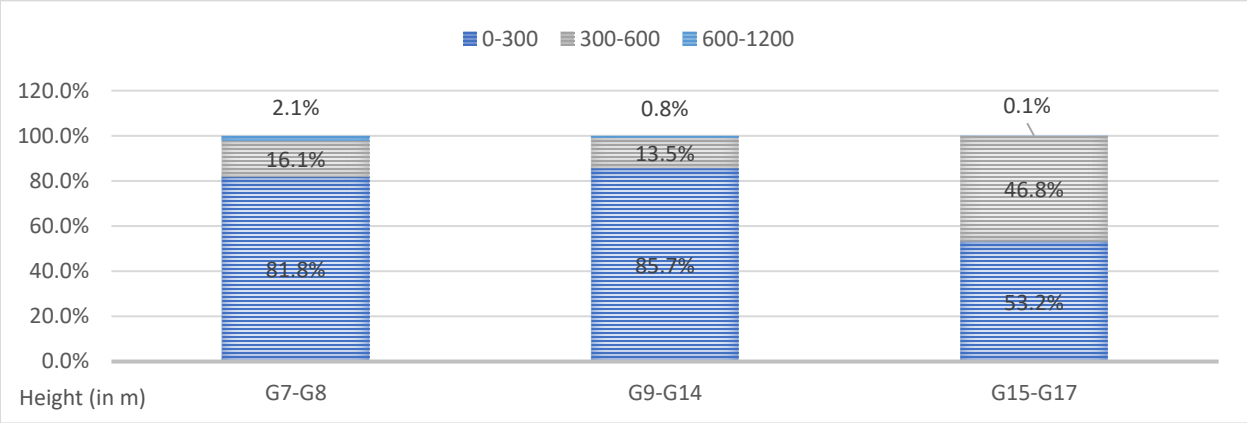


[1]http://www.coalcontroller.gov.in/writereaddata/files/download/coaldirectory/CoalDirectory2019-20.pdf

The recent assessment of coal reserves by GSI (Inventory of Geological reserves of Indian coal, as on 01.04.20) on the basis of resources estimated reveals that Talcher coalfield alone possesses the coal reserves to the extent of 52.5 BT. Out of this, 25.3 BT fall under "Proved" category occurring within 600 metres depth.

The coalfield assumes importance due to occurrence of thick coal seams at comparatively shallow depth over large aerial extent with low dip of the strata. Such characteristics have resulted in good quarriable potentiality of coal over large area within the coalfield. Below figure provides grade-wise, depth-wise coal resources in Talcher coalfield.

Grade wise Geological Resources of Coal at Talcher Coalfield



Source: Coal Controller's organization, Ministry of Coal publications

In addition to coal blocks of MCL in Talcher coalfield. Eleven coal blocks have been allocated to various other players under CMSP Act, 2015 and MMDR Act. Of this Sarapal-Nuapara block applied an application to surrender it. The details of non-CIL coal blocks have been provided in table below. These blocks have additional potential to produce around 82 MTPA considering their PRC.

List of Non-CIL Coal Blocks

S No.	Name of Coal Block	Allocated To	PRC (MTPA)
1	Naini	The Singareni Collieries Co Ltd	10
2,3	Utkal-E, Utkal-D	NALCO	4
4	Baitarni West*	Odisha Mining Corporation	15
5	New Patrapara^	The Singareni Collieries Co Ltd	25
6	Mandakini	Karnataka Power Corporation Ltd.	7.5
7	Radhikapur East^	EMIL Mines And Mineral Resources Limited.	5
8	Radhikapur West	Vedanta Ltd.	6
9	Chandrabila	Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO)	10
10	Brahmani[$]	The Orissa Minerals Development Co. Ltd.	NA
11	Sarapal-Nuapara+	Odisha Mineral Development Co Ltd.	

* Allocated for sale of coal

^ Allocated for Commercial Sale of Coal

+ Requested to surrender of this block vide letter dated 09.11.2020.

$ Block is still under exploration phase and mining plan is not even prepared.

On March 25, 2021, Ministry of Coal launched 2nd tranche of auction of coal mines for commercial coal mining, offering 67 mines. Out of the total 67 mines offered, 10 mines are from Talcher coalfield, details of the same are provided in table below.

The peak rated capacity of these coal blocks is as less 2 MTPA to as large as 30 MTPA. Two blocks namely Ramchandi Promotion block and Alaknanda are partially explored.

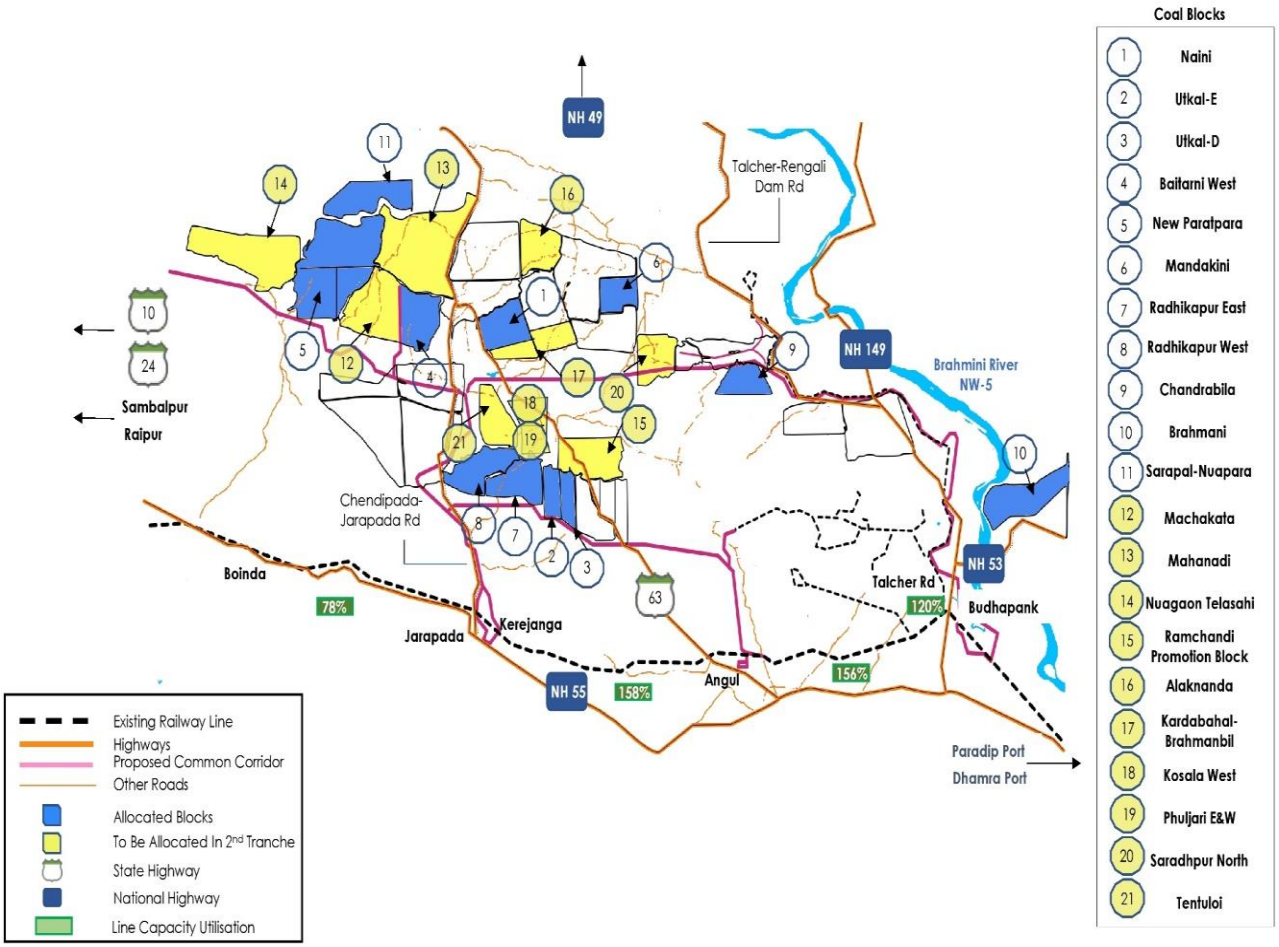
For unexplored blocks, the extractable reserve is evaluated considering 60% of geological reserve. The mine life is considered 25 years and accordingly the PRC of Ramchandi Promotion block and Alaknanda is 36 and 12 MT respectively.

List of Coal Blocks allocated in 2nd Tranche

S No.	Name of Coal Block	Status	Geological Reserves (MT)	PRC (MTPA)
1	Machhakata	Explored	1400.6	30
2	Mahanadi	Explored	1993.5	
3	Nuagaon Telasahi	Explored	904.6	20
4	Ramchandi Promotion block	Partially Explored	1500	36*
5	Alaknanda	Partially Explored	500	12*
6	Kardabahal-Brahmanbil	Explored	1066.6	10
7	Kosala West	Explored	1600	38.4
8	Phuljari East & West	Explored	2210.8	10
9	Saradhpur North	Explored	1116.4	6
10	Tentuloi	Explored	1730.2	2

* Estimated PRC

Source : CMPDIL, Ministry of Coal



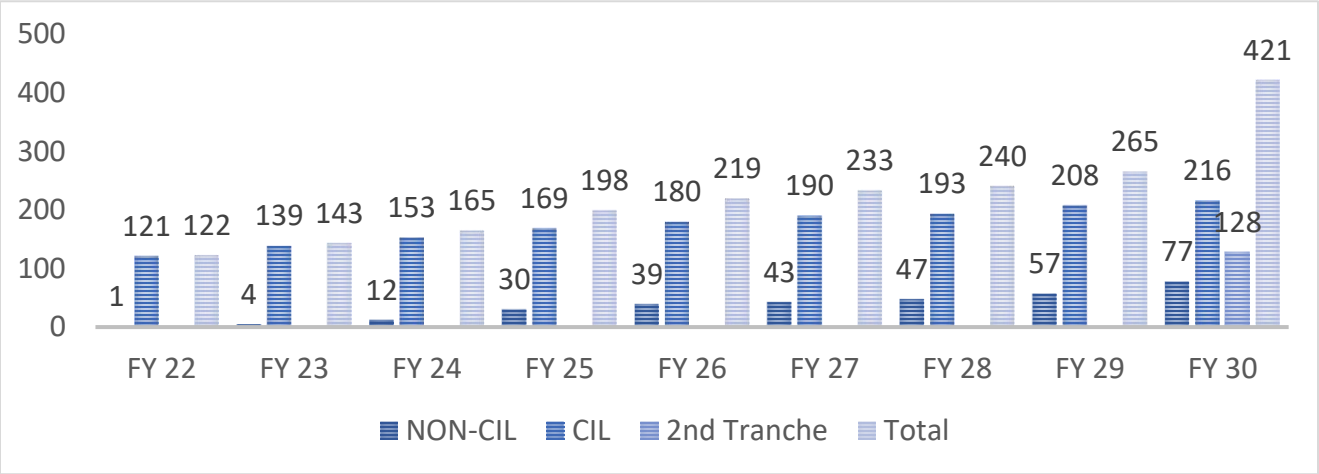
Talcher map showing coal blocks, roads and railway connectivity

Source: CMPDIL, Ministry of Railways, The Commerce & Transport Department

Production

Talcher coal field has produced about 78 million Ton coal in year 2020-21 and as per projections by MCL there is potential of going upto 138 MTPA by 2023-24. If we examine the over all progress of rail and road network progress in Talcher area vis a vis the coal production plan of MCL and non CIL coal mines, there is huge gap in supply and demand.

Coal Production Potential in Talcher by FY30



Source: CIL, Coal Block Allocatee

Let us examine the status of capacity augmentation woks being planned or under execution by Indian Railways which shall help Talcher region for coal evacuation to various parts of the country.

Infrastructure

Road

National Highway-6, National Highway-55, National Highway-23, and National Highway-149 pass through the Angul district. National Highway-55 (Previously NH-42) connecting Cuttack-Angul-Sambalpur passes more or less parallel to the southern fringe of the coalfield at about 5 to 7 km. National Highway-23 connecting Talcher-Samal-Pallahara passes through the eastern part of the coalfield.

Another prominent district road is Angul-Chhendipada-Deogarh road passing through the central part of the coalfield. National Highway-53 originating from Chandikhol, also passes through northeastern part of the coalfield and joxins with National Highway-23. Recently a 2-Lane concrete road from Basundhara West Extension Check post to Sardega Railway Siding has been completed.

Important Roads in the vicinity of Talcher

S No.	Roads	Type of Road	Description
1	National Highway 53 (Previously – NH 6)	National Highway	Connects Surat, Gujarat to Sambalpur then to Paradip port in Odisha
2	National Highway 55 (Previously – NH 42)	National Highway	Highway which connects Angul district to Cuttack
3	National Highway 149	National Highway	Passes through Talcher to Connecting Pallahara and Nuahata near Angul
4	State Highway 63	State Highway	It starts near Budhapal and passed through Chhendipara, Kosala and terminates near Angul
5	State Highway 24	State Highway	SH 24 starts near Reamal and passes through Paikmal, Rendakhol and terminates near Baudhgarh on NH 57
6	State Highway 10	State Highway	It starts near Rourkela and passes through Sundargarh, Jharsuguda and terminates at Sambalpur
7	Angul- Talcher Road	Local Road	Connects Angul to Talcher
8	Angul-Rengali Metalled Road	Local Road	Connects Angul to Rengali

S No.	Roads	Type of Road	Description
9	Kanihla-Angul Road	Local Road	Connects Angul to Kanihla
10	Chendipada-Jarapada Road	Local Road	Connects Chendipada to Jarapada
11	Kosala-Brahmanbil Road	Local Road	Connects Kosala to Brahmanbil
12	Kosala Road	Local Road	Connects Kosala to Kumunda

In addition to this following are few projects which are ongoing:

a) Construction of CT roads with length of 35 km.
b) Widening of road from 2 lane to 4 lane from Bankibahal to Kanika Railway Siding for 27 km.
c) Construction of separate 4-Lane (modified 2-lane) dedicated coal corridor road from Bankibahal to Bhedabhal (on SH-10) in Sundargarh dist with length of 33 km.
d) 4-laning of Birmitrapur-Barkote section of NH-23 is in progress. This route connects Ranchi to Rourkela, the pre-eminent steel city of Odisha and goes further up to Angul-Talcher belt, the coal, power and industrial hub. The corridor crosses NH-6 (New NH No. 49) at Barkote.

As per District Vision Plan 2020, the condition of National Highway-23 is poor and requires immediate attention2. In many cases kachcha road/ Village / Panchayat Road connects the block to State or National highways.

A transport road of length 22 km having at least 7.5meter width through villages has been proposed for movements of coal trucks from mines to State Highways. Accordingly, the

[2]https://cdn.s3waas.gov.in/s3f5deaeeae1538fb6c45901d524ee2f98/uploads/2021/02/2021020429.pdf

strengthening and widening of village road needs to be taken up with State Govt. on priority basis.

Regular maintenance of these roads need to be taken care as these roads are used by heavy vehicles due to which abrasion of these roads is frequent and thus the road's average life span is low.

Railway

The coalfield is suitably connected by railway network. The Talcher coal field is surrounded by railway lines, the majority of which are operated by East Coast Railway, headquartered in Bhubaneshwar, Odisha. The south-eastern part of the coalfield where all the coal mining activities are taking place at present, is connected by rail to Bhubaneswar (150 km.).

The coalfield is situated near Cuttack-Sambalpur railway line, which is linked to Howrah-Chennai and Howrah-Mumbai railway line. Sambalpur-Talcher rail link, the connector to Howrah-Mumbai and Howrah-Chennai main railway lines, runs almost parallel to NH-42.

The rail link carries heavy goods traffic of the region to the main rail network lines which are accessible at about 100-150 km distance from Talcher area. Coal mines load their cargo at Angul Junction, Jarapada, Kerejanga, and Talcher stations for transfer to end consumers through railways.

Talcher is approximately 192 kms away from a major port in the eastern coast of Odisha i.e. Paradip port. Railway link is available between Talcher and Paradip-via-Cuttack. For

shipping, railway lines from Talcher through Budhapank connect the mines to Paradip and Dhamra Port on the coast. Talcher coalfield is also favourably located for consumers of southern and western India itself where coal can be transported either by rail or rail cum sea route.

Existing Railways lines in vicinity of Talcher Coalfield

S No.	Railway Zone	Section
1	South East Central Railway	Kharsia - Jharsuguda Rd Jn.
2	South Eastern Railway - East Coast Railway	Jharsuguda Rd Jn. - Sambalpur Jn.
3	East Coast Railway	Sambalpur Jn. – Kerejanga
4	East Coast Railway	Kerejanga – Budhapank
5	East Coast Railway	Budhapank - Talcher- Sunakhani
6	East Coast Railway	Angul- Talcher
7	East Coast Railway	Sunakhani – Bimlapur
8	East Coast Railway	Budhapank - Nergundi Jn.
9	East Coast Railway	Budhapank - Sukinda Road
10	East Coast Railway	Sambalpur Jn. - Bargarh Rd.
11	East Coast Railway	Bargarh Rd. - Barpali
12	East Coast Railway	Barpali - Titlagarh Jn.

Source: Ministry of Railways

It is noticed that non-CIL blocks offer about 80 MTPA traffic which will move over long distances. This traffic will require transportation capacity in both directions, i.e. Sambalpur side and Bhubneswar side. There are various ongoing works which shall improve the rail infrastructure on Indian railways network in all the directions, including north, west and south.

The Railway Board has sanctioned a new line project from Brahamapur to Rairakhol. which is expected to add ongoing railway capacity in the region. The 3rd & 4th line projects will add significant capacity and need to be expedited.

Ongoing works for Talcher coalfield region

S No.	Railway	Project Name	Type	Length (in km)	Project Cost (INR Crore)	Source of Funding	Target Date of Commissioning
1	East Coast Railway	Jarapada Budhapank 3rd &4th Line	Ongoing	101	810	PB pg 11.2.3 item 24	
2	East Coast Railway	Budhapank Rajatgarh Salegaon 3rd & 4th Line	Ongoing	86	1172	PB pg 11.2.3 item 25	
3	East Coast Railway	Sambalpur-Jarapada doubling incl Talcher Angul	Ongoing	174	1539	PB pg 11.2.2	
4	East Coast Railway	Angul-Jarapada New loop to Line	Ongoing	55	1800	SPV	
5	East Coast Railway	Angul Balram Line	Ongoing	13	145	Deposit Basis	December 21
6	East Coast Railway	3rd & 4th line Talcher to Budhapank and Budhapank to Rajatgarh	Ongoing	134	1178		March 24

S No.	Railway	Project Name	Type	Length (in km)	Project Cost (INR Crore)	Source of Funding	Target Date of Commissioning
7	South East Central Railway	3rd and 4th line between Jharsuguda Bilaspur	Ongoing	206	Jarapada-Budhapank - 810 Budhapank-Salegaon 1178	Railway funded project	March 24

Source : Pink Book, National railway Plan, Ministry of Railways

In addition to that there is requirement of additional railway infrastructure. Thus, to summarise, the following new works proposals are suggested for further improving railway connectivity in the region:

a) The outer rail corridor in Talcher non-CIL block area with double line configuration and having alignment encircling the coal blocks is recommended.
b) Four-line configuration from Tentuloi to Jarapada
c) Four-line configuration between Sambalpur-Jarapada.
d) Dedicating 2 lines for freight traffic on the pattern of DFC on Jarapada to Salegaon on 3rd and 4th line

7.2 Challenges

Even with the above infrastructure in place there shall remain a big challenge how to transport product coal to the Indian Railways main lines and first mile connectivity projects are not taking off despite creation of a SPV namely MCRL in 2016, which is a Joint Venture company of MCL (64%), IRCON(26%) and IDCO (10%). Even after lapse of more than 4 years shareholders are struggling in closing the necessary legal framework and IRCON did not infuse requisite equity amount. SPV does not have any full time MD.

This is big issue and coal evacuation from Talcher is going to be affected adversely if necessary first mile rail and road connectivity are not developed.

7.3 Approach for evacuation of coal from Talcher region

Since as many as 10 non CIL miners have been allocated coal blocks in the region and about 11 coal blocks are expected to be allocated in second tranche there are multiple users, and it shall not be possible for every user to develop its own private siding connecting to the Indian railway mainline therefore creating a shared infrastructure is the only solution for both road and rail. It has also been made clear by the Government that all miners including non CIL have to fund such common user line or road.

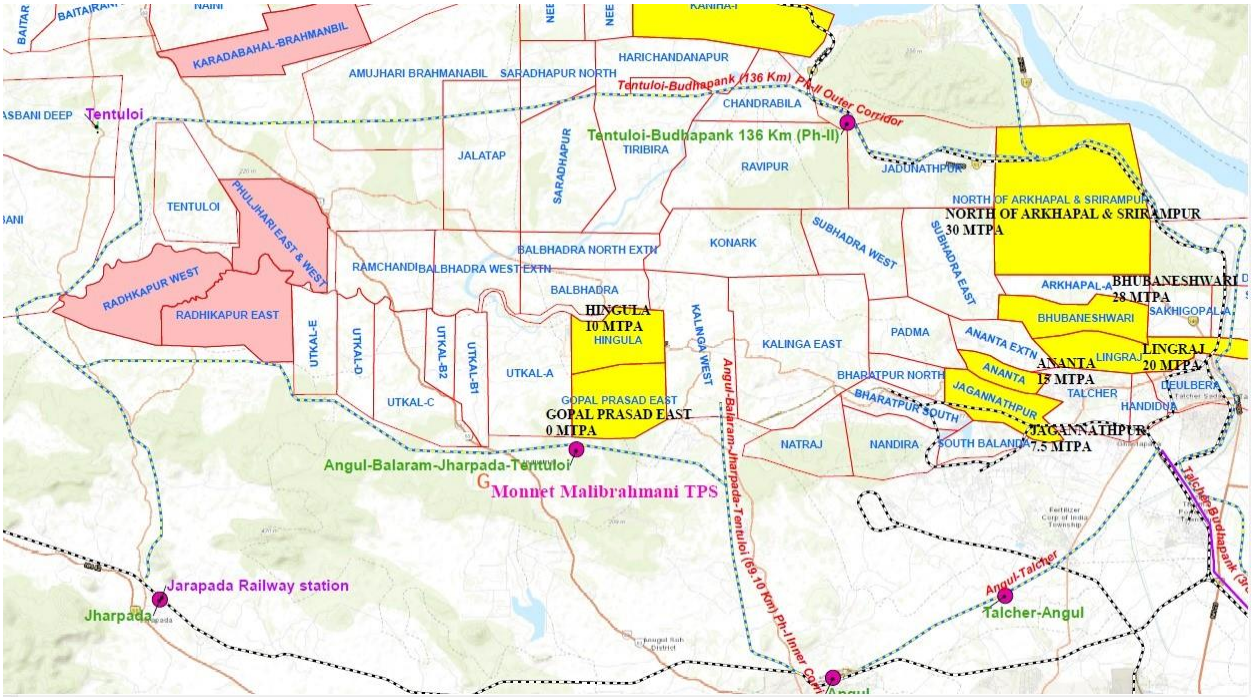
The government can play an important role in facilitating the creation of the Common use Infrastructure scheme. A well-designed and well-managed common use asset, available to everybody at a uniform price and service level, will drive mining companies to focus more on efficient mining. As a result, the government is required to enact policies that facilitate the construction, operation, and maintenance of common use assets, as well as to establish standards and enable developers to obtain the required return on investment through the collection of user fees under "Take or Pay" directly from the users, in addition to payment of terminal charges and a share of apportioned earnings by Indian Railways.

7.4 Identified projects to be developed as shared Rail & Road infrastructure

The following two projects are suggested as shared infrastructure in order to develop requisite facilities to evacuate coal from Talcher area.

7.4.1 Development of Outerloop (Talcher Budhapank-Eastern Side)

MCRL is already developing the 66 km line (inner loop) from Angul to Jharpada via Balrampur and Putgadia. Outer loop (Talcher Budhapank (Eastern Side) of 100 Km may be implemented by establishing the separate SPV with onboarding the private investors. Below is the map representing the outer loop corridor:

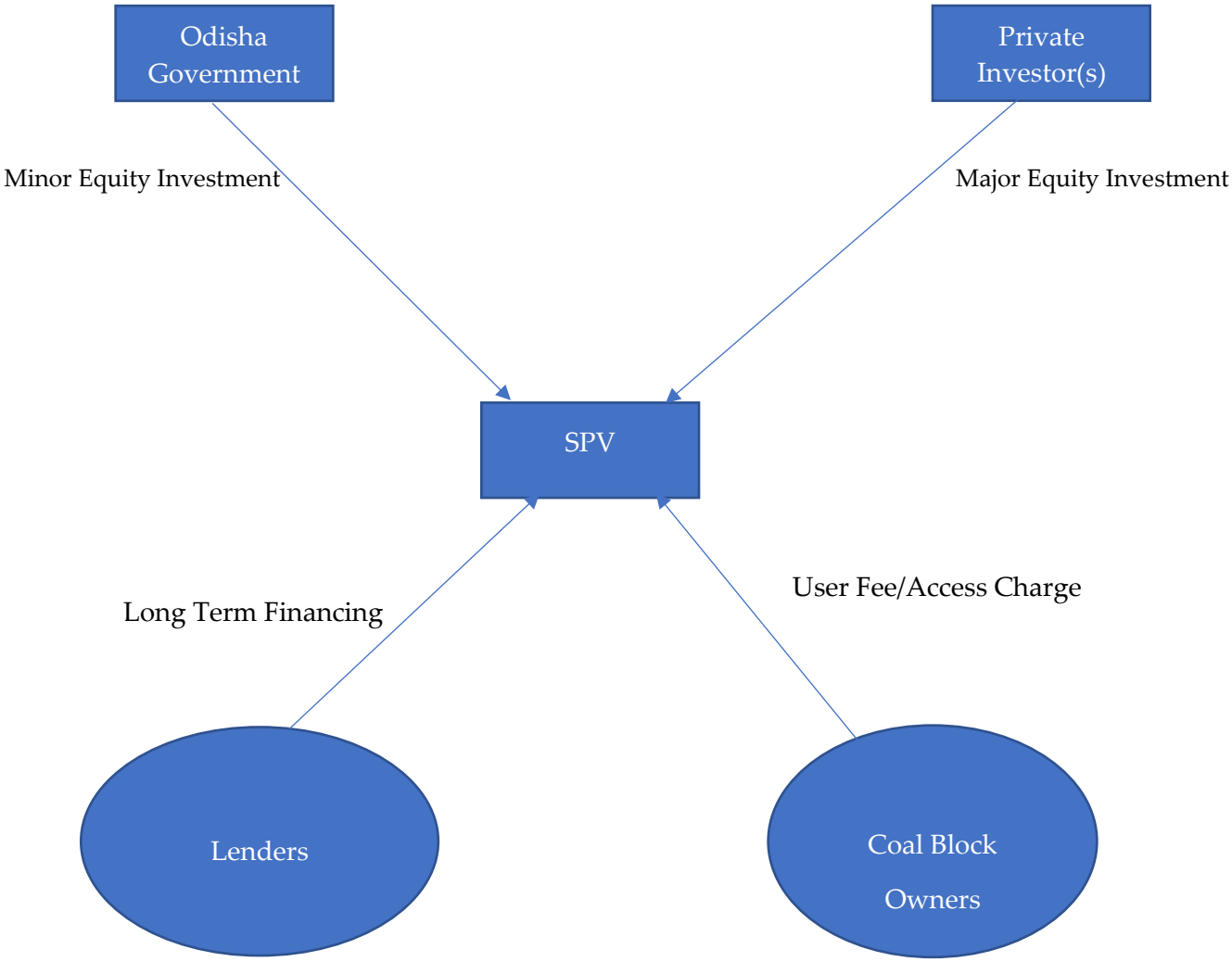


The following route may be adopted under transaction structuring mode for successful development of the project:

7.4.1.1 Route: By establishing separate SPV for Outerloop

MCRL is already executing the inner circle. It has faced inherent challenges in implementation of the same. Hence, in order to make the development of the outer loop at a faster pace it should be developed as a common use infrastructure through an SPV route with private investor holds majority share and Odisha state government holds minority in lieu of land and other infra support.

Table 2: Represents revised shareholding structure



- Odisha Government may assist in Land Acquisition. This will give comfort to private coal allottees putting in equity in the company as Land Acquisition is a critical bottleneck for these players to come forth and invest in evacuation infrastructure.
- SPV may enter into "Take or Pay" agreements with all possible users and decide on the access fee based on the cost of capital and O&M and the committed tonnage and the recovery of access fee. This will be in addition

to the access fee Indian railway is going to pass on to the SPV from the apportioned earning.

- Detailed feasibility may be undertaken for the project to establish the technical viability. Based on the detailed feasibility, financial viability assessment to be carried out considering the optimal mix of capital structure (typical debt equity ratio being 70:30).
- Suitable EPC contractors may be appointed for project execution.
- Long term Funds may be arranged from the banks (to avoid asset liability mismatch) to improve the overall returns to shareholders.

A broad financial analysis has been carried out to assess the financial viability of implementing the proposed evacuation infrastructure projects based on the available information and certain assumptions taken on broad basis in order to arrive at the return on the overall project. The same is discussed below: -

7.4.2 The Key Financial Assumptions

7.4.2.1 Project Related Assumptions

The current investment proposition based on the information available and as per general assumptions, is summarized hereunder:

Sr. No	Parameters	Assumptions
1.	Project Development period	3 years
2.	Project Start Date	31-March-2022
3.	Project End date	31-March-2025
4.	Traffic Lead	100 Km
5.	Wagon Type	BOXNHL
6.	Axle Load	22.9

7.	Wagon Payload	68 T
8.	No of Wagons proposed in a rake	59 Nos
9.	No of Rakes Available	21 Nos
10.	Wagon Payload	68 Tonnes
11.	Average Speed	35 Km
12.	Loading Time	5 hr
13.	Unloading Time	5 hr
14.	Stabling %	10%
15.	No. of Days Available for operation	335 days
16.	Maintenance Period	30 days
17.	No trips in a year	522 days

7.4.2.2 Peak Capacity Addition

Particulars	UoM	Units
Addl Peak Annual Movement	Tonnes	38418912
Addl Peak Annual Movement	Mn Tonnes	38.42
Capacity Utilization	%	80%
Annual Capacity Utilized	Mn Tonnes	30.74

7.4.2.3 Project Cost Assumptions

Capex Assumptions		
Particulars	**UoM**	**Units**
Land Costs	Rs.Cr/Km	8
Other Capital Expenditure Costs	Rs Cr/Km	11

Operating Assumptions

Particulars	UoM	Units
Employee & Wages	Cr/km	0.25
Fuel & Oil Charges	Cr/km	0.17
Other Charges	Cr/km	0.40

7.4.2.4 Total Project Cost

Particulars	UoM	Units
Land hard cost	Rs Cr	884.17
Other Capex costs	Rs Cr	1216.49
Contingency	Rs Cr	105.06
IDC & Margin Money	Rs Cr	191.86
Total Capex Cost		**2,398.71**

7.4.2.5 Means of Finance

Particulars	%
Debt	**70%**
Equity	**30%**
Upfront Equity Contribution	**30%**

7.4.2.6 Debt Assumptions

Particulars	UoM	Units
Door to Door Tenure (including construction period of 3 years)	**Years**	11
Rate of Interest	**pa**	9%
Repayments		Structure Repayment Schedule over 8 years

7.4.2.7 Working Capital Assumptions

Particulars	UoM	Units
No. of Days	**Days**	**90**
Margin Money		**25%**
Rate of Interest	**p.a.**	**11%**

7.4.2.8 Depreciation

Particulars	SLM	WDV
Depreciation Rate	**3.52%**	**15%**
Maximum Depreciation	**95%**	

7.4.2.9 Taxes

Particulars	Units
Applicable Corporate Tax Rate	**24.00%**
Applicable Rate of MAT	**0.00%**

Based on the above assumptions, a broad financial analysis has been carried out which is presented as under:

7.4.3 Projected Financial Indicators

(Rs In Cr.)

FY ending	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Revenue	553	553	553	553	553	553	553	553	553	553	553	553	553	553	553	553	553
Total Revenue	**553**	**553**	**553**	**553**	**553**	**553**	**553**	**553**	**553**	**553**	**553**	**553**	**553**	**553**	**553**	**553**	**553**
Operating Expenditure	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82
EBITDA	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**	**471**
EBITDA Margin	44%	46%	49%	52%	55%	58%	61%	65%	66%	66%	66%	66%	66%	66%	66%	66%	66%
Interest on Term Loan	144	128	110	91	72	53	32	11	-	-	-	-	-	-	-	-	-
Interest on WC	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Depreciation	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
PBT	265	281	299	317	336	356	376	398	408	408	408	408	408	408	408	408	408
PAT	**201**	**213**	**227**	**241**	**255**	**270**	**286**	**302**	**310**	**310**	**310**	**310**	**310**	**310**	**310**	**310**	**310**
PAT Margin	**36%**	**39%**	**41%**	**44%**	**46%**	**49%**	**52%**	**55%**	**56%**	**56%**	**56%**	**56%**	**56%**	**56%**	**56%**	**56%**	**56%**

7.4.4 Project IRR

(Rs In Cr.)

FY ending	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
PAT	-	-	-	201	213	227	241	255	270	286	302	310	310	310	310	310	310	310	310	310
Depreciation	-	-	-	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
Deferred Tax Liability	-	-	-	42	34	27	21	16	11	8	5	2	-0	-2	-4	-5	-6	-7	-8	-9
Interest on Term Loan (Net of Tax shield)	-	-	-	132	112	93	75	58	42	25	8	-	-	-	-	-	-	-	-	-
Terminal Value of Assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	608
Capital Expenditure (excluding IDC & MM)	464	855	887	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Increase in NWC	-	-	-	116	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FCFF	-464	-855	-887	312	412	400	390	383	377	372	368	366	363	362	360	359	357	356	356	963
Project IRR	**13.77%**																			

Comments:

- As may be seen from the figures above, even with the conservative assumption of annual capacity utilization at 80% of the total capacity and User Fee/Access Charge of Rs 180/tonne (present User Fee/Access Charge for Sarguja Rail Corridor Pvt Ltd is approximately Rs 300/tonne), the IRR works out to 13.77%. The numbers are based on broad assumptions and may be finalized based on the detailed feasibility of the project.
- The development of this loop is all the more important due to absence of any other infrastructure in the coalfield for first mile connectivity. Development of Common infrastructure will bring in required financial, technical, and operational expertise to address the existing evacuation infrastructure bottleneck in the region.

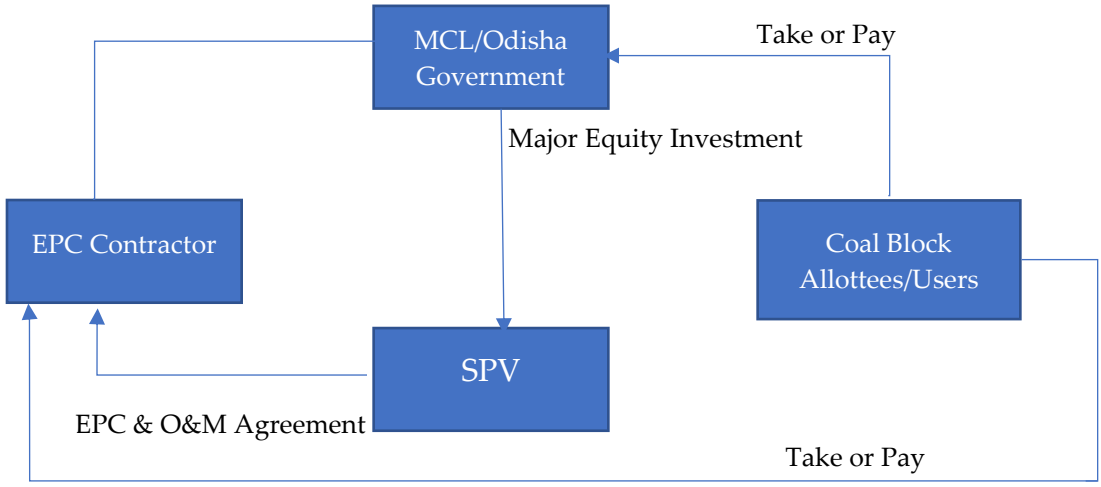
7.4.5 Route: By way of Concession Allotment

Alternate arrangement could be that MCL/Odisha State Government may appoint Technical Agency/ Implementing agency as EPC/Concessionaire who will have the responsibility of developing the requisite infrastructure within stipulated timeline. MCL/ Odisha State Government shall remain the owner of the asset. "Take or Pay Agreement" may be executed with MCL/ Odisha state government for establishing the possible revenue stream for the asset. The revised shareholding structure may be as under:

- *Proposed Shareholding Structure*

Under the proposed shareholding structure, an SPV may be created by MCL/Odisha State Government which may be brought in as a majority shareholder who may undertake the creation of the project facilities. The probable structure could be that majority of the equity may be infused by MCL/Odisha State Government. SPV can have an EPC agreement with the EPC contractor/Technical Agency who would develop the asset along O&M agreement. The broad shareholding structure is given below:

Table 3: Represents revised shareholding structure



- *Possible revenue stream from the proposed model*

The cost of the project may be recovered by the EPC/Concessionaire by way of "Take or Pay" agreements and decide on the access fee based on the cost of capital.

- *Pros of the Proposed Structure*
    - Visible Revenue Stream
    - Reliable long-term income yields.
    - O&M arrangement may be outsourced.
    - Land acquisition risk is minimised on account of state government to acquire the required land for the project.
    - Diversification of risk (Construction risk and O&M risk).
- *Cons of the Proposed Structure*
    - Delay in implementing the project by EPC/Concessionaire could lead to time over run.
    - Higher equity arrangement/ infusion as compared to the project structure with private investor as majority shareholder.
    - Not core business activity.

7.4.6 Angul-Chendipada-Jharpada, suggested for development on shared road infrastructure basis

As the development of inner loop rail line is going to take time as a parallel a shared road infrastructure needs to be developed to provide not only immediate facility but also as a parallel facility for immediate coal transportation from the region.

This shared road will have following two legs:

a. Angul- Chendipada -State highway no 63 which is 35 km, and
b. Chendipada-Jarpada – other District Road of 35 km

This shared road infrastructure can be developed by floating a SPV on the basis of two options:

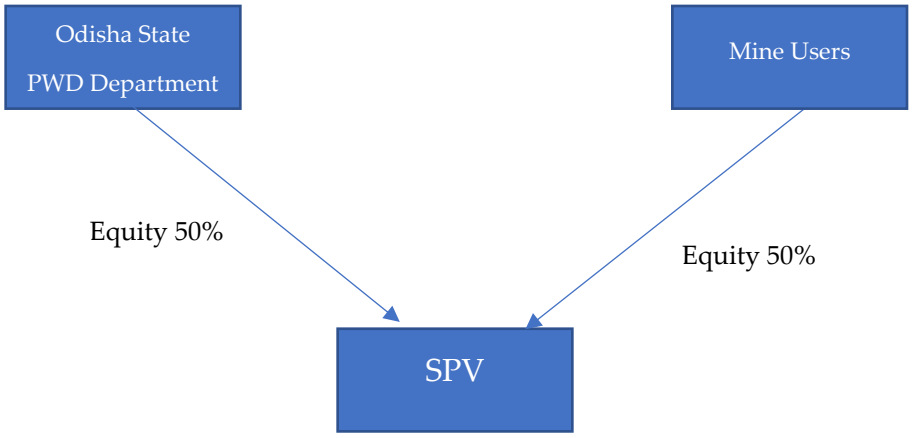
7.4.6.1 Option 1: As a Toll Road concept but a "Take or Pay" agreement with users

Ministry of Coal (MoC) can request Odisha state PWD to develop the above road infra by creating an SPV with private mine users as one of the equity partner(s) to undertake project execution in a time bound manner.

- *Proposed shareholding structure*

Under the proposed shareholding structure, an SPV may be created with the following parties which may be brought in as a shareholder who may undertake the creation of the project facilities for efficient transportation of coal from the mines in the Talcher region. The probable structure could be that 50% of the equity may be infused by Odisha State Government rest 50% may be brought in by the mine users in the region. Below diagram represents the shareholding structure as follows:

Table 3: Represents shareholding structure



SPV can implement the project on its book. The capex can be funded through optimal mix of debt and equity.

- *Possible revenue stream from the proposed model*

Upon completion, a cost recovery model may be adopted for toll collection till capital cost with interest is collected from users who did not contribute to the initial funding. Such pending cost may be collected from the users by way of notified fees in the form of toll collection and such notification may be issued by the Odisha state government in consultation with the equity partners and various stakeholders.

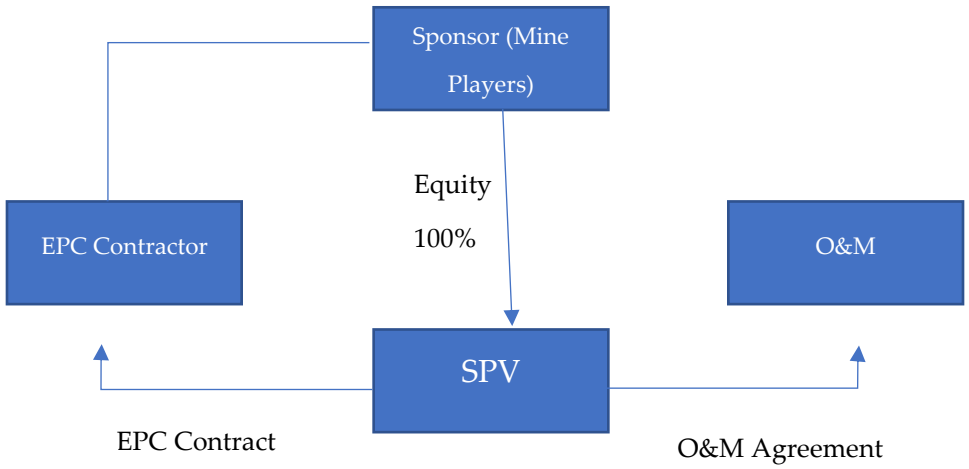
7.4.6.2 *Option 2: Fully funded by the primary users by bringing entire cost upfront*

Under such structure the project facility may be created by the mine players in the vicinity of the region.

- *Proposed shareholding structure*

Under the proposed structure the sponsor (mine players) will create a SPV with 100% equity which in return take the task of implementing the project asset and an EPC contractor may be assigned a fixed time and fixed price contract among SPV and Sponsor for developing the project facility. Further, once the project facility is completed, a separate O&M agreement may be executed among SPV and O&M contractor who will maintain the project asset during the life of the project.

Table 4: Represents shareholding structure



- *Possible revenue stream from the proposed model*

Upon completion, a cost recovery model may be adopted for toll collection till capital cost with interest is collected from users. Whatever the completion cost of the project arises the same may be recovered from the users over a period of time. Such recovery may in the form of toll collection and the fee may be notified by the state government.

7.4.7 *Identification of Risks and Its Mitigation*

The key risks, their description and mitigation are mentioned below: -

Risk	Description and Mitigation
Approvals and Clearances	In order to execute the project, requisite approvals and clearances from the statutory authorities, such as Registrar of Companies, sub–Divisional Magistrate, Income Tax/ Sales Tax/Service Tax authorities, local state government agencies, etc need to be sought. Further, necessary permissions from Commission of Railway safety would also be required. Mitigation: In order to reduce the capital-at-risk, and avoid implementation issues, the above approvals should be applied and obtained prior to project construction.
Land Acquisition Risk	Delays in land acquisition even in small size, may cause delay in the commencement of construction and thereby result in escalation of capital cost. This also affects the cost of land acquisition and results in increase in the project cost. Mitigation: Govt. Agency (who is one of the shareholders in the common infrastructure arrangement) shall own up the responsibility to acquire land. This will give comfort both to the private players and the lenders. All land parcels must be acquired prior to commencement of construction.
Project Completion Risk	The project completion risk refers to the risk due to the construction agency's inability to complete the project within the designated period as per the contract. Delay in start of construction and completion within

Risk	Description and Mitigation
	the agreed time frame results in increase in construction and project cost affecting debt serving obligations. Mitigation: Construction Contract should be for a fixed term and a fixed price and should provide for liquidated damages for any delay in implementation of the project. The exact quantum of liquidated damages to be paid are normally linked to the loss in revenues/penalties to be paid for any delay in the implementation of the project. The EPC contractor will also be required to furnish a performance security for its performance obligations.
Revenue Risk (Traffic Risk)	Revenue stream from freight traffic receipts is the main source offunds for the company to meet its obligations of O&M, debt servicing, working expenses, etc. Regular cash flow is the key element for such infrastructure projects, which suffers from long gestation period. Mitigation: Take-or-pay obligation may be imputed upon the end users, which could be in line with the mining plan.
Operational Risk	Operations and maintenance: This risk refers to the contractor's inability to undertake operation and maintenance of the system as per agreed parameters. Any risk in operation and maintenance will affect the financial viability of the project. Mitigation: The O&M agreement should clearly define and include the responsibilities, rights and obligations, operation and maintenance costs payable to East Coast Railway, apportionment of revenue, events of default by both parties, planning of train operation/schedule,

Risk	Description and Mitigation
	compensation payable by the defaulting party to the non-defaulting party.
Cost overruns	Cost overrun and Inflation risk: This refers to the risk associated with cost increase to due various factors such as construction delay, and the risk associated with cost escalation due to inflation during construction and operation. Mitigation: As part of the capital cost estimation, adequate contingency and escalation should be provided for. Further, the user fee/access charge should have appropriate escalation methodology built in.
Force Majeure	Force majeure refers to natural and unavoidable catastrophes that interrupt the expected course of events and prevent participants from fulfilling obligations of the agreement and thus delay the implementation and execution of the Project. Mitigation: Insurance to cover these force majeure events would be sought, to the extent appropriate for construction as well as the operation phase of the project.

It may thus be concluded that with appropriate transaction structure for common use, identification of key risks and putting in place requisite mitigants, robust concession agreement and clearly defined roles and responsibilities of each party to the agreement, common use infrastructure can be successfully implemented and will also reduce duplicate costs of setting up the infrastructure by independent coal miners. This will bring in synergies, technical and financial

efficiencies and reduce overall capital outlay in addition to the development of a robust evacuation infrastructure which is the need of the hour.

8 Transaction Structuring under General Purpose Wagon Investment Scheme (GPWIS)

8.1 Introduction

The Railways has opened up private investment in general-purpose wagons and will allow investors to put in funds in rail cars that can move multiple commodities, including coal, without the need for any special approval. Accordingly, The Ministry of Railways (MoR) vide Master Circular No. 2018/TC(FM)/04/01 dated April 26, 2018 and further amendment dated 29th November 2019 has opened up private investment in general-purpose wagons. The guidelines are expected to provide better and timely availability of wagons while also providing incentives to the wagon investors; thereby MoR promoting private investments in the wagons.

8.2 Eligible Investors

The eligible investors to participate in the scheme are as follows:

a) Producers *or Consumers of the goods to be transported by rail*
b) PSUs, Central Public Sector Enterprises
c) Logistic providers
d) Port owners/ Port Rail Companies
e) Mine owners
f) Wagon *Lease Company (WLC) for end users*

8.3 Eligibility to participate under GPWIS Scheme

a) The procurement of wagons will be allowed only with prior administrative approval of MoR.

b) The rakes inducted under the scheme shall not be merged in IR's pool of wagons and will be distinctly indicated through a color scheme.

c) The General-purpose wagons (BOX, BOXN, BCN etc) to run over the routes approved by Indian Railways.

d) Maintenance of wagons to be undertaken by IR on payment as per agreement to be executed with the wagon owner.

8.4 Major Benefits under GPWIS Scheme

a) Freight rebate/ credit of 10% will be granted whenever the rakes move in loaded condition.
b) Freight rebate of 10% on such loaded wagons will be granted ordinarily for a period of 15 years. Such freight rebate shall not exceed the lease charges payable by IR to IRFC for procurement of such wagons during the first 15 years of the lease agreement between IR and IRFC for leasing of rolling stock.
c) The end-users (other than logistics service providers) have been granted permission to load third party cargo in their rakes in empty direction. This will not only reduce the empty run of GPWIS rakes but will also entail additional revenue to end user investors, in form of freight rebate.

8.5 Railway Wagons – Critical Focus Needed

At present, unavailability of adequate support from the IR is one of the major bottlenecks in coal evacuation. As a result of which, in spite of adequate demand, the coal companies are not in a position to fully evacuate coal from mining / storage locations. Therefore, idle stock of coal has to be kept in storage facilities. This has multiple costs in terms of (i) inventory holding cost (ii) degradation of coal due to self-combustion and moisture absorption, and (iii) pilferage.

Further, Coal India Limited (CIL) has loaded 241.4 rakes/day during 2020-21 against the Annual Action Plan of 273.5 rakes/day. It has been observed that availability of wagons remains a constant constraint in efficient evacuation of coal from mine to the end use plants.

In order to overcome these problems, a transaction structuring is being proposed under the GPWIS scheme which would allow coal companies to invest in the procurement of wagons for efficient evacuation of the coal from the mines along with recovery of their investment from such investment by way of getting freight benefits from IR and from loading of third-party cargo in their rakes in the empty direction.

8.6 Key Assumptions

The current investment proposition based on the information available as per GPWIS Scheme is provided, is summarized hereunder:

S.No	Particulars	Parameter	Assumption
01	Wagons	Wagon Type	BOXN HL
		Axle Load	22.9 T
		Wagon Payload	68 T
		Codal Life of wagon	35 years
02	Logistics arrangement*	Origin	• Jharsuguda JN-JSG
		Destination	• Nagpur (BG)-NGP
		Average Lead Distance* (one side)	650 Km
		Average speed of train	35 km/ hour
		Loading time	5 hours
		Unloading time	5 hours
		Annual Operational Days	335 days (152 trips per rake annually)
		Annual Stabling period	31 Days (~ 365 days – Annual operational period – Annual maintenance period)
03	Operations & Margins	Average coal selling price	Rs.1,150 per tonne for FY 2021 (Grade-G9 with GCV of >4600 but <=4900)
		EBITDA Margins	27% (excluding freight benefit available under GPWIS)
		Capacity Utilization	90% from COD till the codal life of asset

S.No	Particulars	Parameter	Assumption
04	Freight Benefit	Average freight rate for given route and distance under assumptions	Rs.1,398 per tonne corresponding to distance of 650 km
		Freight benefit eligibility	10% of the base freight cost charged by Indian Railways for the supply
		Lease rental charges by IRFC to IR#	Rs.52.87 per thousand of invested amount per half year
		Freight benefit available	The amount of rebate on freight is capped to the extent of lease charges payable by IR to IRFC on annual basis till the recovery of investment.
		Freight during return trip	Rakes will return empty after delivery of coal
05	Maintenance	Maintenance Period	30 days per annum
		Maintenance Cost	Routine maintenance cost is assumed to be charged at 5% of the capital cost per annum
06	Other cost	Stabling Charges	Rs.525 per wagon per day or part of day
		Wharfage and other operational costs	To be borne by end customer (Nil expense for Coal India Ltd)
07	Depreciation and Taxation	Ownership	Asset to be owned by investor and in such an arrangement, the wagons shall be considered fixed assets for the investor, and it will be in a position to claim depreciation on its books
		Capital Asset Life (SLM – As per Companies Act)	15 years
		WDV Depreciation Rate	18.10%
		Corporate Tax Rate	25.17%
		MAT Rate	Nil

**The average distance has been conservatively assumed at 650 kms corresponding from Jharsuguda to Nagpur. Any decrease in distance would lead to corresponding decline in the trip time and therefore increase in the number of trips covered in a year, thus increasing the cash flows further.*

#As per GPWIS scheme, freight rebate of 10% on such loaded wagons will be granted ordinarily for a period of 15 years. Such freight rebate shall not exceed the lease charges payable by IR to IRFC for procurement of

such wagons during the first 15 years of the lease agreement between IR and IRFC for leasing of rolling stock. In case the investment is recovered in less than 15 years stipulated above, the freight rebate shall cease from the date of exact recovery. As taken from the Annual Report of IRFC for FY2020-21, in respect of the incremental assets acquired during 2020-21 through IRFC funding, lease rentals have been fixed at Rs.52.87 per thousand per half year over a primary lease tenor for 15 years.

Further, the lease rentals charged by MOR is minimum in FY2021, i.e. the latest available financials, during the last 14 years and the same has been conservatively assumed. Accordingly, for investment of Rs.1312 crore, the annual lease rental comes at Rs.138.72 crore.

Considering the proposed investment to be made, and assumptions as mentioned above, 30.49 MT of coal is expected to be moved through the proposed wagons annually. However, under the base case scenario, capacity utilization of 90% is considered. Accordingly, 27.44 MT of coal is assumed to be transported annually from COD till codal life of the asset. The annual coal supply estimated through the proposed wagons is as below.

Figure 1: Annual Coal Supply Estimation

Particulars		Amount
No of Rakes	A	50
No of wagons per rake during operations	B	59
Wagon Pay Load (T)	C	68
Rake Coal Carrying Capacity (T)	D = (B*C)	4012
No of Operation days in a year	E	335
Round trip coal transportation days	F	2.20
Annual no of trips per rake	G = (E/F)	152
Peak coal transportation capacity (MT)	H = (A*D*G)/10^6	30.49
Capacity utilization (%)	I	90%
Annual coal transported through Proposed Wagons (MT)	J = (H*I)	27.44

8.7 Financial Analysis

Two streams of revenue have been considered while assessing the financial viability of the project viz. (i) revenue from freight benefit in accordance with the terms of GPWIS scheme and (ii) revenue generated due to supply of additional coal through the wagons under proposal.

(i) revenue from freight benefit in accordance with the terms of GPWIS scheme

As per GPWIS scheme, the investors will get a 10 per cent rebate on a base freight for 15 years for each loaded wagon. Such rebate shall, however, be ordinary for a period of 15 years subject to a cap to the extent of the lease charges payable by the Railways pays to

its financing arm, Indian Railway Finance Corporation, for procurement of rolling stock. In case, the investment is recovered in a period less than 15 years stipulated above, the freight rebate shall cease from the exact date of full recovery.

Accordingly, freight has been computed as under:

Freight rate for transportation of coal upto 650kms from Jharsuguda to Nagpur region) has been considered and accordingly the freight benefit has been computed. The freight rate for transportation of coal upto 650kms from Jharsuguda to Nagpur region is Rs 1,398/ton. The total freight benefit for transporting 27.44MT of coal (30.49 MT of coal at 90% capacity utilization) over 650kms works out to Rs 383.64 crore annually. However as discussed above, freight rebate shall not exceed the lease charges payable by IR to IRFC for procurement of such wagons during the first 15 years of the lease agreement between IR and IRFC for leasing of rolling stock. As taken from the Annual Report of IRFC for FY2020-21, in respect of the incremental assets acquired during 2020-21 through IRFC funding, lease rentals have been fixed at Rs.52.87 per thousand per half year over a primary lease tenor for 15 years. This works out to Rs 138.72 crore on annual basis.

(ii) revenue generated due to supply of additional coal through the wagons under proposal

In addition to the revenue from freight benefit, it is assumed that movement of additional coal through wagons will also improve the profitability and accordingly average margin (EBITDA) of CIL for last three FY 2018 to 2021 i.e. 27% has been additionally considered in the proposal for computation of IRR for the project. It is understood that the availability of wagons is the only constraint for the augmentation in supply of coal while the mines have sufficient spare facilities to generate additional coal production. To be more

conservative, it is assumed that only 50% of the additional coal shall move through the proposed new wagons (as there are buyer preferences for movement of coal) and accordingly EBITDA margin from only 15.25 MT of coal (i.e. peak capacity for transportation based on the assumptions considered), subject to capacity utilization of 90%, has been considered under the current project and no conversion from the existing modes (roads or other modes) to rail mode has been assumed.

Hence, with EBITDA margins of 27% and coal sales value of Rs.1,150 per tonne, one million tonne of additional supply of coal is expected to generate Rs.31.05 crore of EBITDA. Thus 15.25 MT of coal at 90% capacity utilization (which comes to 13.72MT) is expected to generate Rs 426.04 cr of EBIDTA annually.

- It is understood that there is a surplus capacity projected and therefore no additional investment is required for the additional production of 30.49 MT. Thus, investment of only Rs 1312 crore for procurement of railway wagons has been considered for assessing the viability of the project.

- Indian Railways will take up the responsibility for the railway wagons maintenance; however, the investor will be paying maintenance fee for the same as assumed in the basic assumptions.

- As per GPWIS scheme, if IR has to stable these rakes in railway owned yards at the request of end user or is required to do so on account of any operational reason attributable to the end user, stabling charges as notified by MoR will be payable. Further, the terminal unloading charge and the terminal access charge shall be borne by the customer. Under the assumptions, stabling charges is assumed to be borne by investor while no expense is considered wharfage charges and other operational costs. It is assumed that any wharfage charges and other costs, if levied

shall be payable by the end user. Accordingly, annual stabling period is conservatively assumed at 31 days equivalent to 10% of the round trip time excluding maintenance period (assumed to be 30 days). Further stabling charges has been assumed in accordance with the notification issued by Ministry of Railways, GoI vide notification no. TC-I/2021/201/efile/1(3344010) dated 01.03.2021 which gives reference to rates of stabling charges. Annual stabling charge works out to Rs. 4.80 cr.

8.8 Project IRR

The following revenue streams have been considered while computation of Project IRR:

(a) revenue from freight benefit received under the GPWIS scheme; and
(b) margin from transportation of 13.72MT coal through wagons procured under the scheme.

Considering the same and other the assumptions enumerated in previous sections, a snapshot of the computation of Project IRR for a 35-year period (codal life of asset) is given below:

Particular for the FY ending	Year	Cash gen from add coal supply	Freight Benefit	Salvage Value	Total Inflow	Cap. Invest.	Maint. Cost	Stabling Charges	Tax	Total Outflows	Net Cash Inflow
31-Mar-22	1	-	-	-	-	656.00	-	-	-	656.00	(656.00)
31-Mar-23	2	-	-	-	-	656.00	-	-	-	656.00	(656.00)
31-Mar-24	3	426.04	138.72	-	564.76	-	65.60	4.80	64.65	135.05	429.71
31-Mar-25	4	426.04	138.72	-	564.76	-	65.60	4.80	75.47	145.87	418.89
31-Mar-26	5	426.04	138.72	-	564.76	-	65.60	4.80	84.33	154.73	410.03

Particular for the FY ending	Year	Cash gen from add coal supply	Freight Benefit	Salvage Value	Total Inflow	Cap. Invest.	Maint. Cost	Stabling Charges	Tax	Total Outflows	Net Cash Inflow
31-Mar-27	6	426.04	138.72	-	564.76	-	65.60	4.80	91.59	161.99	402.78
31-Mar-28	7	426.04	138.72	-	564.76	-	65.60	4.80	97.53	167.93	396.83
31-Mar-29	8	426.04	138.72	-	564.76	-	65.60	4.80	102.40	172.80	391.97
31-Mar-30	9	426.04	138.72	-	564.76	-	65.60	4.80	106.38	176.78	387.98
31-Mar-31	10	426.04	138.72	-	564.76	-	65.60	4.80	109.65	180.05	384.71
31-Mar-32	11	426.04	138.72	-	564.76	-	65.60	4.80	112.32	182.72	382.04
31-Mar-33	12	426.04	63.49	-	489.53	-	65.60	4.80	95.58	165.98	323.55
31-Mar-34	13	426.04	-	-	426.04	-	65.60	4.80	81.39	151.79	274.25
31-Mar-35	14	426.04	-	-	426.04	-	65.60	4.80	82.86	153.26	272.78
31-Mar-36	15	426.04	-	-	426.04	-	65.60	4.80	84.06	154.46	271.58
31-Mar-37	16	426.04	-	-	426.04	-	65.60	4.80	85.05	155.45	270.59
31-Mar-38	17	426.04	-	-	426.04	-	65.60	4.80	85.86	156.26	269.78
31-Mar-39	18	426.04	-	-	426.04	-	65.60	4.80	86.52	156.92	269.12
31-Mar-40	19	426.04	-	-	426.04	-	65.60	4.80	87.06	157.46	268.58
31-Mar-41	20	426.04	-	-	426.04	-	65.60	4.80	87.50	157.90	268.14
31-Mar-42	21	426.04	-	-	426.04	-	65.60	4.80	87.86	158.26	267.78

Particular for the FY ending	Year	Cash gen from add coal supply	Freight Benefit	Salvage Value	Total Inflow	Cap. Invest.	Maint. Cost	Stabling Charges	Tax	Total Outflows	Net Cash Inflow
31-Mar-43	22	426.04	-	-	426.04	-	65.60	4.80	88.16	158.56	267.48
31-Mar-44	23	426.04	-	-	426.04	-	65.60	4.80	88.40	158.80	267.24
31-Mar-45	24	426.04	-	-	426.04	-	65.60	4.80	88.60	159.00	267.04
31-Mar-46	25	426.04	-	-	426.04	-	65.60	4.80	88.77	159.17	266.87
31-Mar-47	26	426.04	-	-	426.04	-	65.60	4.80	88.90	159.30	266.74
31-Mar-48	27	426.04	-	-	426.04	-	65.60	4.80	89.01	159.41	266.63
31-Mar-49	28	426.04	-	-	426.04	-	65.60	4.80	89.10	159.50	266.54
31-Mar-50	29	426.04	-	-	426.04	-	65.60	4.80	89.17	159.57	266.47
31-Mar-51	30	426.04	-	-	426.04	-	65.60	4.80	89.23	159.63	266.41
31-Mar-52	31	426.04	-	-	426.04	-	65.60	4.80	89.28	159.68	266.36
31-Mar-53	32	426.04	-	-	426.04	-	65.60	4.80	89.32	159.72	266.32
31-Mar-54	33	426.04	-	-	426.04	-	65.60	4.80	89.36	159.76	266.28
31-Mar-55	34	426.04	-	-	426.04	-	65.60	4.80	89.38	159.78	266.26
31-Mar-56	35	426.04	-	-	426.04	-	65.60	4.80	89.41	159.81	266.23
31-Mar-57	36	426.04	-	-	426.04	-	65.60	4.80	89.42	159.82	266.22
31-Mar-58	37	426.04	-	40.63	491.64	-	65.60	4.80	89.44	159.84	331.80
IRR											**26.52**

**It is assumed that the capital investment of Rs 1312 cr shall be funded through equity entirely. Thus, the Project IRR shall be equal to Equity IRR as FCFF is equal to FCFE.*

Comments:

- As may be seen from the figures above, even with the conservative assumption on of movement of only 50% of the additional coal through proposed wagons, the IRR works out to 26.52%.

- The freight benefit is capped to the extent of lease charges payable by IR to IRFC on annual basis till the recovery of investment.
- As mentioned earlier, the assumption considers margin from 13.72 MT of coal (i.e. peak capacity for transportation based on the assumptions considered), subject to capacity utilization of 90%, with no conversion from the existing modes (roads or other modes) to rail mode. No additional capital expenditure for the generation of additional production has been attributed to the current project. Any change in the above assumptions shall have material impact on the viability of the project.

8.9 Investment Recovery Period

Under this section, the recovery of the investment of Rs. 1312 crore through the freight benefit of Rs 138.72 crore is computed. For the purpose of the same, revenue from only freight benefit received under the GPWIS scheme and capital investment of Rs 1312 crore has been considered. A snapshot of computation of the Investment Recovery Period is provided below:

Figure 2: Payback period

Particulars (in Rs crore) for the FY ending	Year	Capital Investment	Freight Benefit Received (Rs crore)	Investment Recovery based on Freight Benefit (Years)
31-Mar-22	0	656.00	-	-
31-Mar-23	0	656.00	-	-
31-Mar-24	1	-	138.72	-
31-Mar-25	2	-	138.72	-
31-Mar-26	3	-	138.72	-
31-Mar-27	4	-	138.72	-
31-Mar-28	5	-	138.72	-
31-Mar-29	6	-	138.72	-
31-Mar-30	7	-	138.72	-
31-Mar-31	8	-	138.72	-
31-Mar-32	9	-	138.72	-
31-Mar-33	10	-	63.49	**9.46**

As may be seen from the figures above, considering the freight benefit, the investment recovery period is 9.46 years from the COD.

8.10 Conclusion

The financial analysis has been carried out considering investment of Rs. 1312 crore in the procurement of wagons over two years while the project to be operational by 01-April-2023. Two streams of revenue have been considered while assessing the financial viability of the project viz. (i) revenue from freight benefit in accordance with the terms of GPWIS scheme and (ii) EBITDA (margin) generated due to supply of additional coal through the wagons under proposal.

Considering the above and other assumptions provided in the report, the project IRR works out to 26.52%. It is assumed that the capital investment of Rs 1312 cr shall be funded through equity entirely. Thus, the Project IRR shall be equal to Equity IRR as FCFF is equal to FCFE.

Considering the freight benefit, the investment recovery period is 9.46 years from the COD.

The proposal also seems to make long-term strategic sense for the country's economy at large:

- Evacuation infrastructure continues to remain a bottleneck and requires immediate action.
- It is understood that rail is a cheaper mode of coal transport compared to road and any buyer of coal will incur lower costs if he gets coal through Rail transport. The augmentation of rail transport infrastructure of due to procurement of wagons will ensure faster delivery of coal which would have otherwise not been possible due to non-availability of wagons of IR.