Container train operations after 20 years of deregulation

The way forward

April 2025

pwc

FICCI

Foreword from FICCI

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I am happy to share with you the FICCI–PwC report on 'Container train operations after 20 years of deregulation: The way forward' to be released at the Container Rail Symposium 2025 – Vision, Progress and Way Ahead, jointly organised by FICCI and the Association of Container Train Operators (ACTO).

India's container rail sector stands at a pivotal moment, marked by steady investment, promising potential and the pressing need for transformational growth. While the country's total container market has expanded at a 7% compound annual growth rate (CAGR) since 2010, outpacing gross domestic product (GDP) growth, it still trails behind the overall freight demand, reflecting a clear opportunity to accelerate multimodal freight development – particularly through rail.

With the Indian Railways network is constantly evolving to meet growing demands, there is a significant opportunity to enhance transit speeds, reduce turnaround times and ensure consistent service quality. Addressing these opportunities requires not only infrastructural expansion – including the growth of feeder routes and the development of future dedicated freight corridors (DFCs) – but also operational improvements like double stack container readiness, timely locomotive availability at inland terminals and optimised port handling processes.

This report provides a comprehensive overview of the current container rail landscape in India. It identifies key gaps across infrastructure, operations and policy and presents actionable insights for enhancing efficiency, asset utilisation and cost competitiveness. It also emphasises the importance of terminal development, streamlining licensing procedures and rethinking pricing mechanisms to reduce the cost to trade and support India's ambition of building a resilient and globally competitive logistics ecosystem.

I am confident that this report will serve as a strategic resource for policymakers, infrastructure developers and logistics stakeholders to help unlock the full potential of containerised rail movement in India.

I welcome your insights and collaboration in this transformative journey.

Foreword from PwC

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PwC India

We are pleased to present the knowledge paper ‘Container train operations after 20 years of deregulation: The way forward’, developed by PwC in association with FICCI. The rail sector is expected to play a crucial role in shaping the future of Indian freight transportation sector. Our insights highlighted in this paper reflect that enhancing the efficiency and competitiveness of India’s rail-based container logistics offers large opportunities but, at the same time, requires addressing several key challenges.

The container train operator (CTO) market was deregulated in 2006, which led to significant participation of private sector in the form of capital investments as well as service quality improvement. However, now that the first batch of licences issued in 2006 are up for renewal 20-years post deregulation, it is an opportune time to revisit the policies, assess sector performance, understand key challenges and deliberate on ways to make it a vibrant sector that acts as an enabler for the economy transformation of the country.

The ambitious target set by the Indian Railways to increase the rail modal share to over 40% by 2040 cannot be realised through a business-as-usual approach. In this paper, we also look at prevalent global standard practices and inputs from industry stakeholders to improve sector performance. We understand that this would require not just increasing the rail modal share of commodities already using rail services but also expanding the basket of commodities using the container rail services. The report identifies key challenges impacting sector performance and recommends interventions including revamping policies, building new capacities, and creating a level playing field for various players to improve service quality and optimise cost to make containers on rail an attractive option for inland container logistics compared with road-based services.

It is my hope that this paper sparks a debate among the policymakers, industry leaders and stakeholders in the transport sector and helps them improve the efficiency of this sector to meet the evolving needs of cargo owners/consumers. This could help unlock significant economic benefits by reducing logistics spend in the country.

Let’s work together to make container rail logistics a key enabler of the Indian economic progress for the next two decades.

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Growth in investments and demand for container rail services

India transports approximately 6.3 billion tonnes of freight annually. The freight transport volume has been growing at an annualised rate of 6% since 2014, which is slightly higher compared with the 5% compound annual growth rate (CAGR) in gross domestic product (GDP) during the same period. Road dominates the freight market and handles approximately 65% of freight volume, followed by rail with a 26% share. Other modes of transport include coastal shipping, inland waterways and pipelines, which together handle the remaining 9% of the freight volume. Going forward, the Indian Railways (IR) has set an ambitious target of achieving a 40% share in the Indian freight market by 2040.[1] A large share of the incremental cargo by rail is expected to come from the movement of balance of goods (BoG), which includes a large share of light-weight manufactured goods in containerised form on rail, as per the National Rail Plan (NRP). Therefore, it is important to understand the readiness of the container rail market in terms of enablers and challenges to achieve the modal share target.

The Indian container train operator (CTO) market was deregulated in 2006 when the IR allowed private rail operators to enter the inland container haulage sector, thereby ending the monopoly of the government-owned Container Corporation of India (CONCOR). Since this policy change, 21 private companies have obtained licences to operate as CTOs. With some mergers and acquisitions (M&A), there are now 16 licensed operators, with 12–15 actively providing services. This initiative was designed to attract private capital, encourage innovation and enhance the overall efficiency of rail-based freight services.

The CTO sector, including CONCOR and other licensed companies, has invested approximately INR 10,000 crore in procuring approximately 700 rakes[2] to offer export–import (EXIM) and domestic rail-based container logistics services.

Furthermore, the industry has invested significantly in the development of terminal infrastructure, with CONCOR managing a network of 66 terminals[3] and private sector players investing in 30–40 terminals.[4] In FY24, the CTOs together earned an annual turnover of approximately INR 14,000–15,000 crore.

Similarly, the IR has invested significantly to promote sector growth, including investments in increased locomotive procurement and upgraded track infrastructure. It has undertaken initiatives such as the construction of dedicated freight corridors (DFCs), doubling of tracks on high-density routes and economic railway corridors aimed at improving freight flows on corridors of minerals, energy and cement, as well as port connectivity. Regarding the DFCs, a cumulative amount of INR ~94,091 crore has been spent as of 31 March 2024 to develop a capacity of 2,843 running km,[5] including commissioned and work-in-progress projects. The IR has doubled its annual investment for new lines and track renewals from about INR 32,000 crore in FY19 to an estimated INR 68,000 crore in FY26.[6]

Despite these investments, the share of freight movement on rail in containerised form has grown marginally from 4% to 5% between 2014 and 2024.

1 National Rail Plan, 2020 issued by the Indian Railways
2 Number of rakes estimated based on number of rakes with CONCOR as per its FY24 investor reporting and estimated market share
3 CONCOR Investor Presentation, FY24 - https://www.concorindia.co.in/upload/investor/concor-presentation.pdf
4 Estimates based on primary interactions with industry stakeholders
5 DFCCIL annual reports
6 Indian Government Budget Document

Within the container market, EXIM is a key driver of volume, consistently accounting for approximately 80% of total rail-based container freight volume in India and growing at a rate of approximately 7% since 2014,[7] which is lower than the 8% CAGR in the case of road-based movement of EXIM containers due to improvement in road freight logistics.[8]

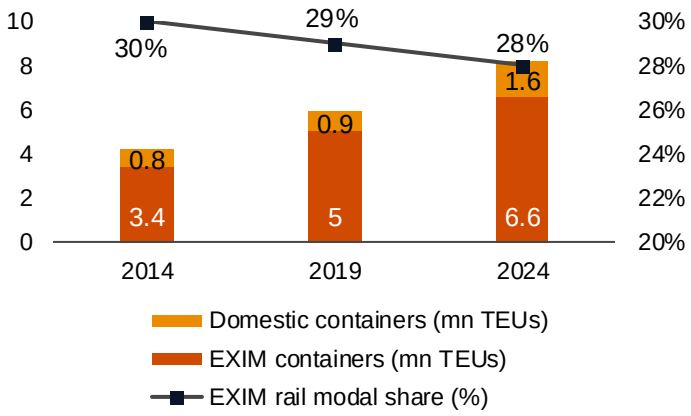
In the domestic container rail segment, growth remained at 7.5% over the last ten years.[9] However, as the volume base is low, even with this growth, domestic container volumes represent only 1% of the overall rail volumes during this period.[10] As of FY19, approximately 1% of BoG moved in containerised form on rail, as estimated by the NRP. However, containerisation of even 5% of the existing cargo, which today moves by road, could result in 10x market growth over the next 10 years.[11] Similarly, the NRP[12] suggested that as much as 66% of all road traffic can be moved in closed body trucks (CBTs) (2,400 MT of cargo), which could be targeted for rail modal shift in containers.

These numbers indicate that while overall freight in the country is growing at a steady pace, the basket of commodities that are moved in containers by rail has not been expanding. Therefore, it is important to understand the factors that hinder newer commodity sets from preferring containerised rail-based movement.

In other words, the share of EXIM container on rail has decreased or remained almost stable from around 30% to 28% over the past decade,[9] owing to strong competition from improving road-based logistics services. This has occurred despite rail having the potential to offer certain key advantages, such as:

- **greener mode of transport** or lower carbon emissions on a per-tonne-km basis
- **potential for savings on logistics cost in case of long-haul routes**, such as over 800–1,000 km as per the current tariff structure
- **improved cargo safety and quality** because of the movement of cargo in containerised form.full

Figure 1: Growth in EXIM and domestic volumes and decrease in rail share of EXIM containers (FY14–FY24)



Source: Indian Railways Yearbooks; UNCTAD; Shipping Ministry - Basic port statistics

Twenty years after deregulation in 2006, when the first batch of CTO licences is up for renewal, now is a good time to review the state of the sector and consider ways to make it an enabler for advancing the efficiency of India's logistics sector.

Going forward, EXIM container traffic demand is estimated to grow in line with the GDP, at 7–8% CAGR over the next decade.[13] Additionally, the domestic container segment offers the opportunity for significant growth.

Overall, while the government has set an ambitious target to increase overall rail modal share to over 40% of India's total freight market by 2040,[14] this cannot be achieved through a business-as-usual growth scenario. As per the NRP, due to the relatively low elasticities of demand in conventional bulk cargo, a higher than current estimated growth of approximately 11% CAGR in the rail-based container movement will be required to achieve the overall rail modal share target. This will require a considerable increase in the rate of EXIM traffic moving by rail, which is currently growing at 7%, and an increase in domestic growth; furthermore, the containerisation of lightweight cargo (LWC), which is currently transported by road in CBTs as loose cargo, will be necessary. Achieving these targets would require **significant interventions in policy, capacity creation, cost competitiveness and service innovation.**

7 Indian Railways Yearbook, 2023–24

8 Estimated based on total EXIM container volumes handled at India's ports; data sourced from UNCTAD and adjusted for rail-based movement of EXIM containers, as reported in Indian Railways annual yearbooks

9 NRP 2020

10 NRP 2020

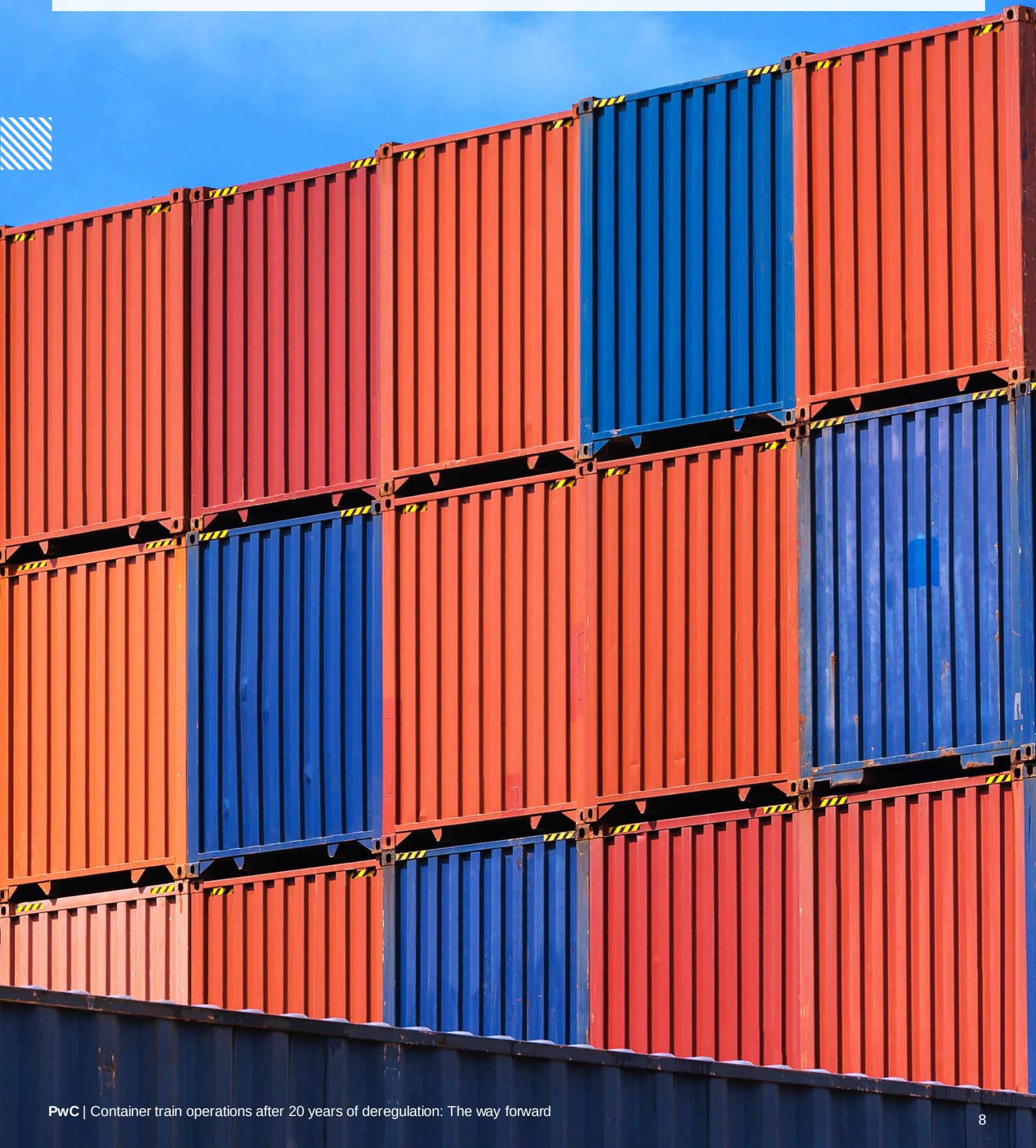
11 Estimated based on BoG volume estimate as per NRP 2020, assuming 5% conversion from road to rail on containers and cargo loading of 15 MT per TEU

12 NRP 2020

13 PwC estimate

14 NRP 2020

Now that the first set of CTO licences issued post-deregulation is up for renewal, it is an opportune moment to examine the key challenges faced by players in this sector and potential interventions to drive the sector's growth. To enable this, the government and CTOs must collaborate towards improving the attractiveness of rail container logistics services over road-based logistics from the end users' perspective. In the following sections, we will analyse the key factors impacting sector performance and assess possible recommendations.



2

Assessing the service quality of container rail services

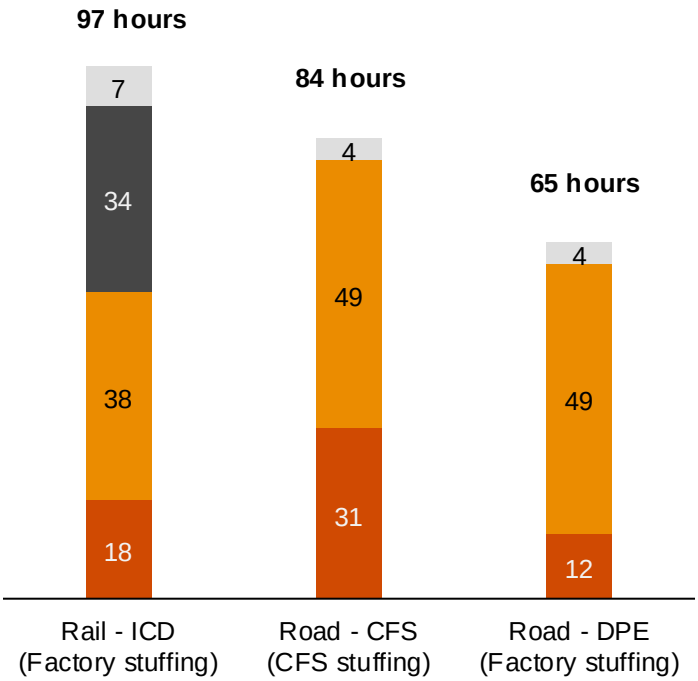
Service quality is a key factor that influences customers' choice of mode for freight transportation. The quality of service in this context has been assessed from the perspective of the end user, which could be the exporter/importer, customs house agent or forwarder. Service quality is determined by the accessibility, availability and reliability in terms of timeliness of the service. In this section, we have analysed the factors that determine quality of service for container rail users and assessed areas in which lower service quality has been observed compared with road/expected standards. We have analysed the transit time and access to the container rail service in the following sections.

Need for a service that is
- easily accessible and available
- reliable

2.1. Transit time on rail compared with road

Transit time on rail is typically dependent on factors such as dwell time at inland terminals, detention at ports and congestion route or outside terminals, all resulting in lower average speed. Analysis indicates that the transit time by road between the National Capital Region (NCR) and Mundra Port (approximately 1,200 km) ranges from 60 to 85 hours. This includes the time taken from factory loading of cargo into a truck container at the factory to the delivery of the loaded container at the port. Road movement can start from container freight stations (CFS) or direct port entry (DPE). In comparison, rail transit time for the same route ranges from 95 to 110 hours. End-to-end rail transit requires 15–50% more time compared with road, depending on whether CFS or DPE route is selected.

Figure 2: Export container logistics: Component-wise transit time between Delhi and Mundra (in hours)



Logistics operations at cargo origin
- Container stuffing at factory
- Factory to ICD movement
- Arrival of empty CBT trucks
- Loading of CBT trucks

Dwell time at terminal
- Container handling at ICD and line up for rake
- Train examination
- Loco arrival

Long-haul transport
- ICD to port
- Factory to CFS
- Factory to port

Other
- Traffic congestion while enroute
- Detentions of rakes due to operational or technical challenges
- Customs clearances at ICD, SEZ, CFS and port
- Logistics operations at or near port

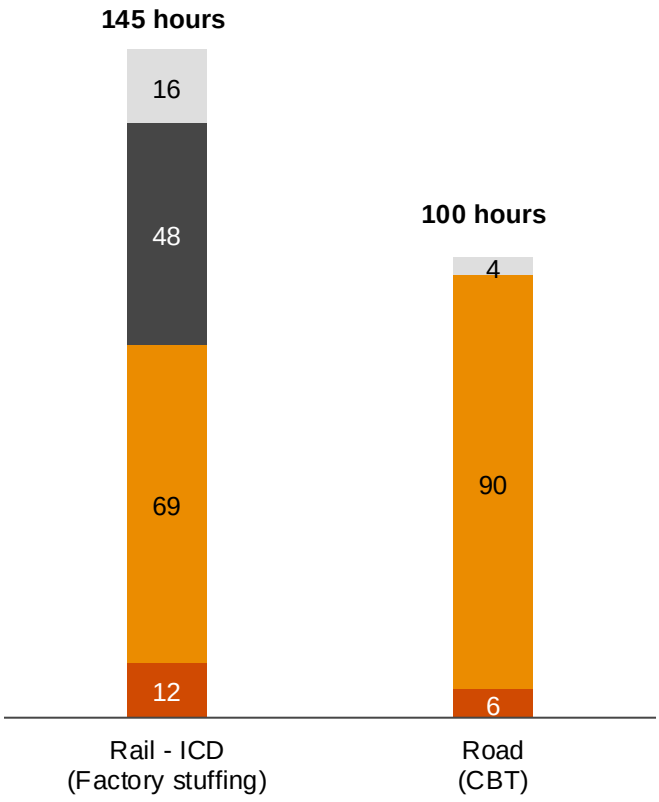
Source: PwC research and analysis

For transporting domestic containers, the transit time by road between Morbi (tiles cluster) and Kolkata (approximately 2,200 km) typically ranges from 100 to 110 hours. This includes the time from the loading of the CBT truck at the factory to the delivery of cargo to the customer.

In comparison, the transit time by rail for the same route typically ranges from 145 to 150 hours, from factory loading to delivery to the customer/consumer via container terminals. The end-to-end rail transit time is thus estimated to be 45–50% higher compared with the road transit time.

Need for improvement in turnaround time and reduced variability in transit time by rail compared with road

Figure 3: Domestic container logistics: Component-wise transit time between Morbi and Kolkata (in hours)



Logistics operations at cargo origin and destination
- Loading of containers/CBT at plant
- Morbi plant to origin container terminal near Morbi
- Unloading at Kolkata container terminal (rail-in to rail-out)

Dwell time at terminal
- Container handling, checks and loading, etc.
- Container storage

Long-haul transport
- Origin container terminal to Kolkata container terminals
- Morbi plant – Kolkata customer/consumer

Other
- Traffic congestion while enroute
- Detentions of rakes due to operational or technical challenges
- Logistics operations at or near port

The end-to-end transit time by rail across EXIM and domestic segments is higher compared with that by road. The data also reveals that the running time as a share of overall transit is higher for road (60–90%) compared with rail (40–50%). The average speed for end-to-end long haul is lower for rail than it is for road. The very nature of inter-modal transport involves transfer of modes and detentions at terminals, accordingly, unless the average rail speed compensates for this extra time along with efficiency in other parts of rail – ICD logistics chain such as dwell time at terminals – the rail transit time will always be higher.

There is a combination of reasons for this gap between road and rail transit; addressing these reasons by implementing suitable interventions can help resolve this gap. The reasons are listed below:

- Lower average speeds en route largely attributable to capacity constraints on the rail network
- Delay in access to rakes due to detentions during maintenance
- Delay in access to services from the IR, such as lack of access to locomotives at inland terminals and crew shortages en route
- Delay in access to ports/terminals because of occasional congestion at these points, leading to the detention of rakes outside ports/terminals or at reception and dispatch yards
- Waiting time for cargo aggregation at origin terminals because of EXIM cargo imbalance in favour of imports and high cost of empty running

2.1.1. Need for capacity addition to reduce congestion and improve transit speed on the IR network

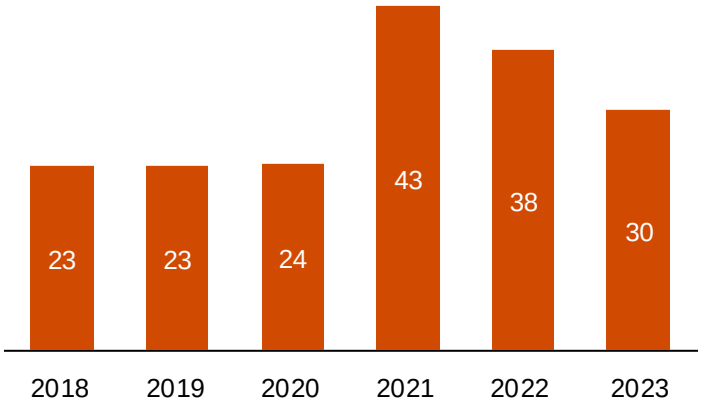
As of FY23, trains on the IR network operated at an **average speed of ~30 kmph**.[15] This is considerably lower than the designed speed, which is approximately 75 kmph[16] for goods trains; nevertheless, this speed has shown some improvement over the past five years. Road transport also maintains a similar speed of **25–30 kmph**.[17] However, as determined based on market interactions, road transport can offer a door-to-door service with much lower variability in committed transit time for the delivery of containers.

This better reliability could be largely attributable to the significant capacity expansion carried out on roads and highways over the last decade, which has allowed for more consistent speeds and lower breakdowns for road users

As already indicated, because multimodal container rail transport inherently involves the extra time required for modal switch at terminals and consolidation of cargo to train load specifications, rail speeds must be higher than road to partially compensate for this extra time. The rest of efficiency is brought in through interventions in other parts of the rail logistics chain, including faster consolidation of cargo to reduce dwell time at terminals. Increasing rail capacity to improve fluidity on the network may improve speeds and transit reliability. Network capacity expansion could be addressed in the following two ways:

1. developing additional lines in the existing rail network by doubling or tripling lines based on the flow of traffic in the section.
2. developing DFCs and segregating passenger and freight services.

Figure 4: Average speed of goods train on the IR network (FY18–FY23) – in kmph



Source: Indian Railways Yearbook

Increasing the capacity of the existing IR network: As of FY23, the track length of the rail network stood at about 69,000 km,[18] which is being used by both freight and passenger traffic. The network comprises a high-density network and a high-utilisation network, which together account for 51%[19] of network length and handle approximately 40%[20] of the total traffic.

According to the NRP, more than 45–50% of the network capacity is over-utilised:

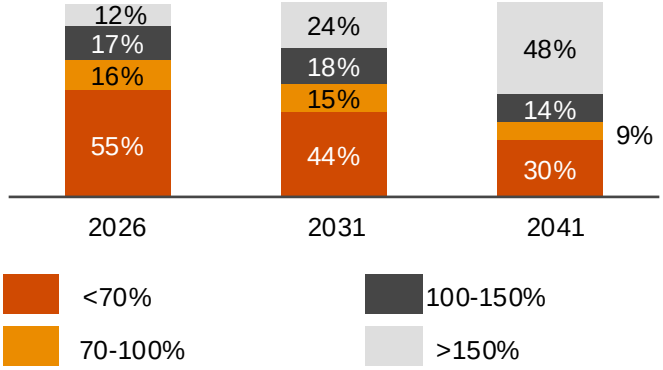
- 25–30% of the rail network is estimated to be operating at more than 100% capacity utilisation.
- 15–20% of the rail network is estimated to be operating at 70–100% capacity utilisation.
- The remaining 50–55% of the network is estimated to be operating at <70% capacity utilisation.

15 Indian Railways Yearbooks
16 Indian Railways Yearbooks
17 https://timesofindia.indiatimes.com/india/government-targets-increasing-average-speed-of-intercity-movement-of-cargo-by-2-3-times/articleshow/94123071.cms
18 Indian Railways Yearbooks
19 NRP 2020
20 NRP 2020

Routes having utilisation levels of 70–100% are considered congested, whereas those with more than 100% capacity utilisation are considered choked.

As per the NRP, the existing rail network may face significant capacity constraints over the next 10–15 years, with growth expected in the overall freight and passenger traffic in the same period.

Figure 5: Projected capacity utilisation in the IR network



Source: NRP 2020

It is estimated that rail lines with utilisation above 100%, which currently represent approximately 29% of the rail network, would increase to 42% by 2031 and 62% by 2041 if capacity is not suitably expanded. At current traffic levels, 45% of the network is congested or choked, which stands to increase to 71% by 2041**.**

Industry insights

There is a need to provide a level playing field as per the terms of the MCA executed and for container traffic to be encouraged; if prioritising isn't possible, a parity on network operations should be provided for the container sector.

- CTO and terminal operator

Industry insights

Frequent restrictions imposed by the Indian Railways on some routes due to capacity constraints is impacting the overall transit time.

- CTO and terminal operator

CTOs are already experiencing challenges resulting from capacity constraints, such as frequent and unplanned restrictions on several routes, which impacts the overall transit speed and reliability of services. In addition, there have been instances in which the running of passenger trains and even other freight trains operating on IR wagons was prioritised over the running of private container trains.

There is a need for immediate capacity enhancements in certain sections and strategic planning for other sections to efficiently accommodate future demand.

Need for dedicated freight and passenger corridors: Because of growing demand, the IR has added 10,000 km of running track across the country over the past five years, with an average addition of ~1,700 km of track length each year.[21] However, the issue of congestion for freight trains persists. One of the reasons for this issue is that at present, most of the rail network is used by both freight and passenger traffic, with passenger trains being typically prioritised over freight trains.

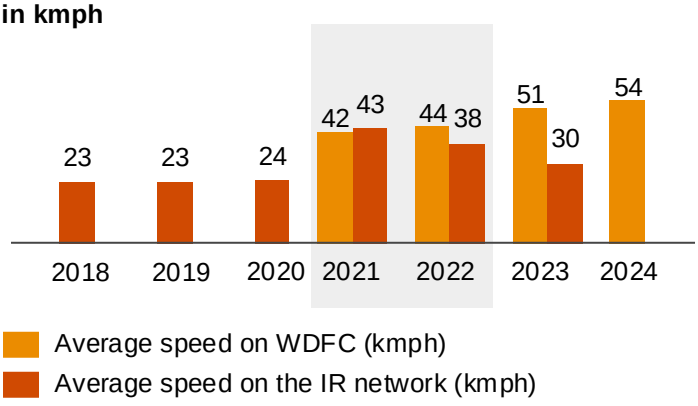
Industry insights

Prioritising passenger trains causes delays in the overall transit.

- CTO and terminal operator

To address this issue and improve transit speed, there is a need for end-to-end DFCs, particularly on routes where the share of freight movement is high. These corridors can help reduce the frequent stoppages of freight traffic and increase the overall average speed of freight trains, thus improving service quality and traffic turnaround time. This is evident based on the speeds achieved thus far on the newly commissioned DFC networks versus the traditional IR network. The impact that passenger train movement has on overall freight train speed was also witnessed during the COVID-19 pandemic (FY21 and 22). Because passenger train movements were reduced significantly during the pandemic, freight trains achieved an **average speed of 40–45 kmph on the rail network**. These COVID-era speeds demonstrate that freight trains can operate faster when dedicated corridors are developed.

Figure 6: Average speed of freight trains on western and eastern DFCs and the IR network (FY18–FY24) – in kmph



Source: Indian Railways Yearbooks and DFCCIL

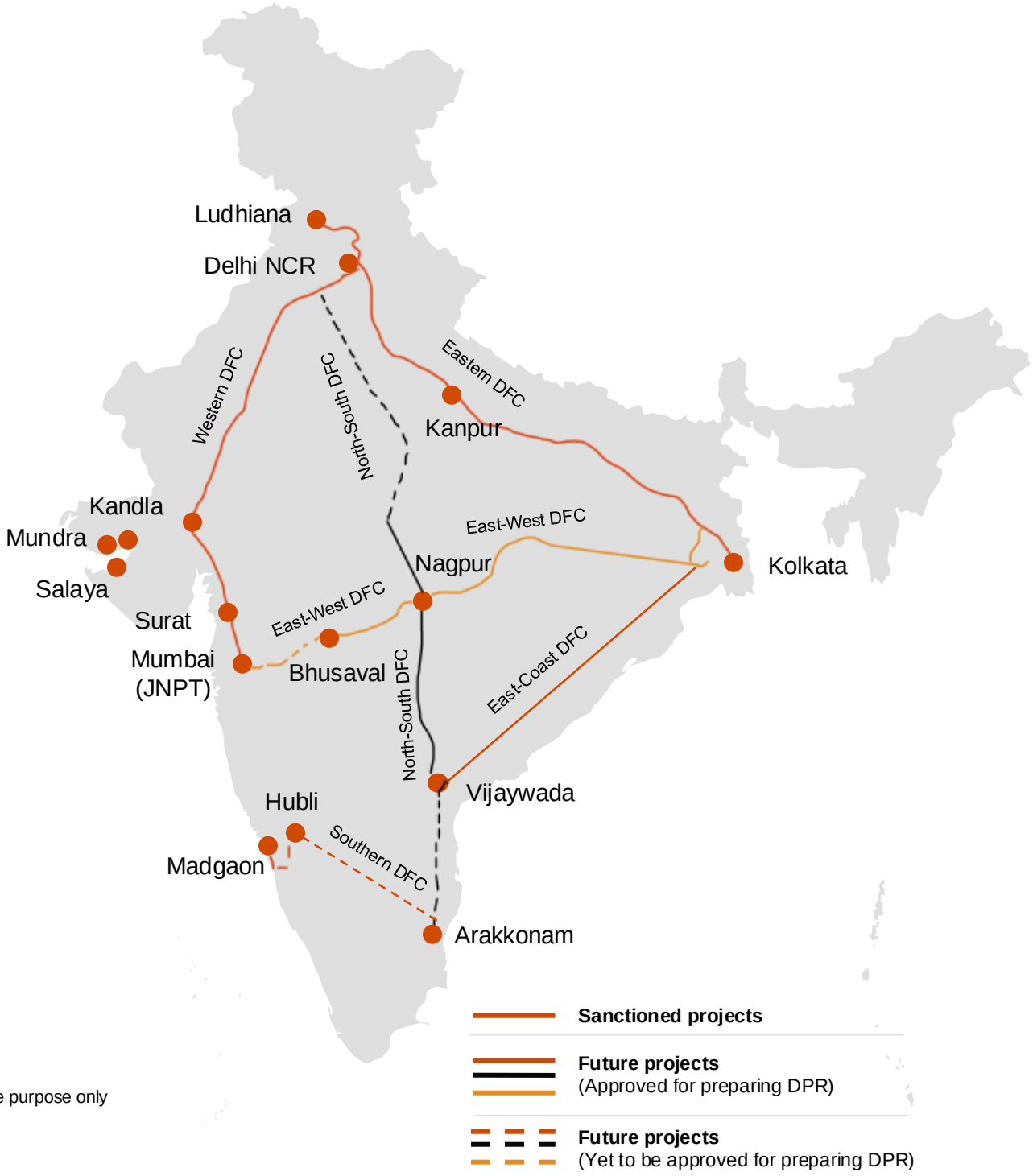
Another argument that can be made in favour of developing DFCs comes from the different nature of track geometry/design required for passenger and freight movements. Tracks for passenger services should be designed for reduced headway between trains with high speeds over 200 kmph; in contrast, for freight movement, tracks should be designed considering the need for heavier load capacity and use by longer trains that stop at fewer stations en route.

[21] Indian Railways Yearbooks

Segregating passenger and freight traffic using a DFC network may be the best way to achieve these differing objectives. Considering the need for dedicated corridors, the Ministry of Railways has established a special purpose vehicle called the Dedicated Freight Corridor Corporation of India Limited (DFCCIL), which is responsible for DFCs' planning and development, financial resource mobilisation, construction, operations and maintenance and business development.

The overall DFC network is envisioned to span ~8,500 km[22] along the **Golden Quadrilateral Network (GQN) of the IR, with the goal of seamless and faster freight movement. The GQN accounts for approximately 16% of the total length of the IR network but handles 58% of its freight traffic**.[23] Five DFCs have been envisaged along the GQN, of which two are partly operational, the Western DFC and the Eastern DFC. The development of the remaining corridors is still in the feasibility stage and needs to be expedited.

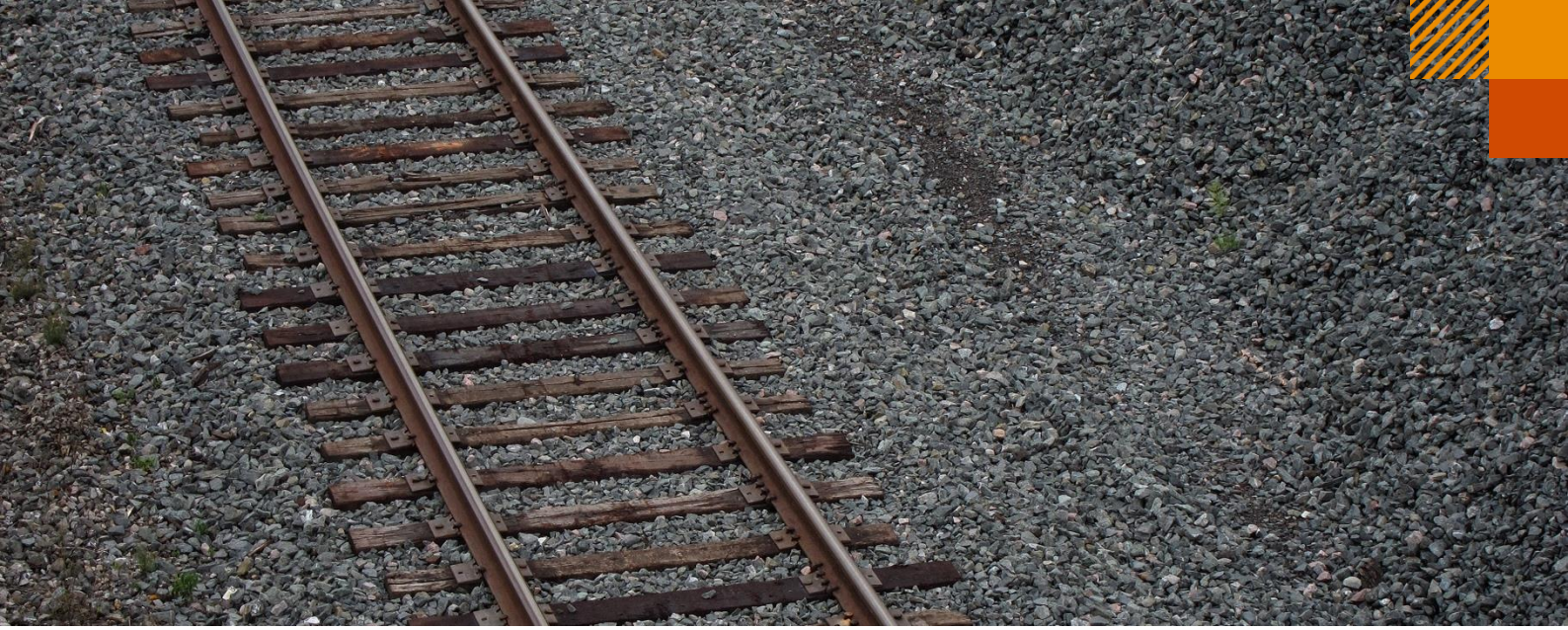
Figure 7: Sanctioned and upcoming DFCs



Map not to scale
Map for indicative purpose only

Source: DFCCIL annual report

[22] DFCCIL annual reports
[23] DFCCIL annual reports

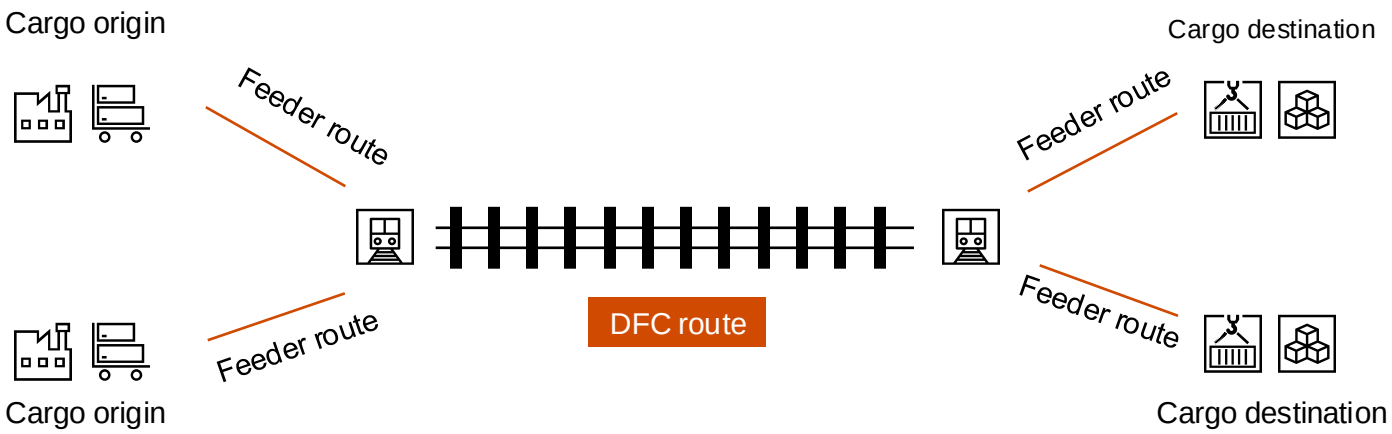


2.1.2 Need for upgradation of feeder routes to improve overall transit speed

DFCs are usually developed from point-to-point connecting clusters with high traffic density flow at present or potentially in the future. However, many specific locations where cargo originates or terminates, such as certain ICDs or ports, may not reside directly on the DFCs and must access the DFC through feeder routes that are usually part of the existing the IR network.

The constraint on modern technical specifications or capacity on such feeder routes often hinders the DFC network's expected speeds and capacity utilisation. Thus, upgrading feeder routes and adding capacity becomes critical for speed and efficiency for entire routes, even where the dominant transit is over the DFC.

Figure 8: Schematic of DFC and feeder routes



Aligning infrastructure mismatch between DFC and feeder routes:

The technical specifications of a DFC line and the feeder route connecting the IR network vary. DFCs are built with advanced infrastructure, including high-mast electrification, high axle-load tracks and modern signalling. In contrast, many feeder routes lack these upgrades; therefore, the maximum operating speed on DFCs is 100 kmph and that of a feeder route is usually ~75 kmph. Moreover, DFCs are designed with a 25 T axle-load capacity on the track; however, most feeder routes are limited to a 22.9 T axle load. The disparity in speed causes delays, operational inefficiencies and increased transit times, as trains must adapt to different track conditions at interchange points.

Furthermore, different axle-load conditions indicate that operators cannot benefit from higher axle-load conditions on the DFC, even with newer wagon designs. The effective axle load must be the minimum on an entire route, which is defined by the constraint of the feeder routes. Addressing these mismatches requires modernisation, track upgrades, high-mast electrification and signalling upgrades on feeder routes. Integrated planning and investment in infrastructure alignment will enable smoother transitions between DFCs and feeder routes, maximising the efficiency and reliability of rail freight movement and permitting higher capacity utilisation of the new design rolling stock that most rail operators are deploying.

Table 1: Need for capacity addition on feeder routes

	Current rail network status across the country….	… and their respective utilisations
DFC	**The track length of current DFC networks is ~2,843 route km, with ~96% completed and operational.** It comprises the Eastern Dedicated Freight Corridor (EDFC) and the Western Dedicated Freight Corridor (WDFC). The EDFC is 100% commissioned, whereas the WDFC is 93% commissioned. It is anticipated to be fully commissioned by the end of FY2026.	The two DFC corridors are capable of handling ~240 trains per day each, with: • **EDFC** operating at **70–80% utilisation** • **WDFC** operating at about **50% utilisation**

Although the DFCs are designed with a high line capacity, the constrained line capacity on feeder routes often limits the utilisation of DFCs. As many feeder routes operate at or near full capacity, there are often bottlenecks at interchange points, increasing overall transit times. For example, cargo from parts of NCR destined for Mundra Port must first travel on the IR network to reach Rewari before accessing the DFC network. Because the weakest link on a network usually constrains capacity on an entire route, the congestion on feeder routes effectively impacts overall network efficiency and capability. This dependency highlights the need for capacity enhancements and upgrades on the IR feeder routes and sidings. High-density feeder routes, such as those linking the NCR to Rewari and Ludhiana to Rewari, require improvements to meet DFC standards.

2.1.3. Configuring future DFC corridors and rolling stock to handle double-stack containers for increased utilisation and better transit times

Need for increasing the pie for double-stack movements

A key issue related to double-stack movements is that only the WDFC is currently configured for double-stack operations; therefore, all feeder routes (and even the EDFC) have varying standards, restricting the movement of double-stack trains due to the lower height of electrical overhead wires. This limitation means that trains transiting from the IR network or the EDFC must transport containers to the WDFC interchange points in a single-stack configuration; these containers are then reconfigured into a double-stack formation before continuing on the WDFC.

The reverse process applies in the opposite direction. This reconfiguration reduces the efficiency of the corridors compared to their potential had they been designed to accommodate double-stack operations

Double-stack movements increase operational efficiency and capacity of the network and lead to lowering costs that, in turn, make rail-based container movement competitive with the road option.

Need for modifications in double-stack configuration

Currently, a restriction exists on the combination of containers that can be loaded onto any wagon for double-stack movements on container trains. In the case of Bogie Low platform wagons (BLCA)-type wagons with 20.32 T axle loads, the permutations for double stack allow **maximum utilisation of the payload capacity of 61T** at 75 kmph[24] while adhering to the following basic principles:

- ensuring 40-ft containers on the top stack
- lighter weight on the top stack
- staying within the 61T payload capacity of the wagon.

Nonetheless, for the newer, heavier axle-load wagons now operating on the system, certain restrictive loading combinations for upper and lower stack containers and speed limitations against the designed speed of the wagon prevent a full payload and speed utilisation of the wagons. This situation has resulted in sub-optimal use of the investment made by train operators in the higher axle-load wagons. Moreover, establishing the right combination of containers in the complex double-stack configuration currently prescribed often increases the turnaround time because of the complexity of load planning and loading execution. Therefore, the axle-load restrictions need to be revisited by the IR to align with the wagon design loads for the benefit of the container trade. Relaxing the restriction would help carry more loads on the same rake and better utilise the capacity created (being created) by the train operators.

As discussed thus far, the container rail market faces significant service quality challenges that hinder its growth potential. Shippers often opt for road transport, despite its potentially higher cost, particularly over longer distances, because of the unreliability and inefficiency of rail service, often due to capacity constraints on the network. Service reliability must be enhanced by minimising transit time variability and increasing travel speed to improve asset utilisation levels and make rail a more competitive option.

Addressing these challenges requires focusing on infrastructure improvement and preparing for future demand to manage operational disruptions effectively. The IR and other agencies have implemented several key measures; however, additional interventions are necessary to meet the growing demand. Some possible interventions have been summarised below.

[24] DFCCIL annual reports

Proposed interventions to improve service reliability

- **Need for separate freight and passenger lines on high-utilisation routes:**
  - Developing DFCs on routes where freight train movement share is high and likely to steadily grow
  - Ensuring that feeder lines to the DFC network are technically compatible with double stack, axle load and other parameters and expediting feeder route and DFC integration
  - Ensuring that future DFCs suport double-stack container operations. This proactive approach will enhance operational efficiency and help better accommodate the anticipated growth in containerised freight movement.
- While the complexity of multiple handling points at the start and end of the middle mile (container exchange points) will persist, **increasing average rail speed and ensuring consistent speed** across the network may offset time lost at exchange points to a significant extent.
- It is necessary to resolve existing double-stack restrictions to permit maximum utilisation of load capacity and speed for all container wagon designs across DFC and non-DFC routes.
- A **transit-committed rail service between** origin and destination (O-D) pairs could also help in developing a reliable rail service.

Global best practices for improving the reliability of freight services

Rail transport in Switzerland has one of the highest levels of transit time punctuality in the world, and this includes both passenger trains and freight trains.

Infrastructure: The construction of Lotschberg and Gotthard Base tunnels, part of the New Rail Link through the Alps project, has improved transit reliability by creating more direct routes through the Alps. The Gotthard Base Tunnel is estimated to have reduced travel time through the Alps by approximately 1 hour for freight trains. Switzerland has a network utilisation concept in its rail infrastructure, which enables short- and long-term planning to maintain passenger and freight rail services.

Technology: Projects such as Integrated Production Planning and the European Train Control System have been implemented to streamline operations and improve service efficiency. The country is conducting pilot tests to move towards level 2 and 3 automation of freight trains to further improve efficiency.

Scheduling: SBB emphasises meticulous planning of construction work, rolling stock and resources. This involves careful scheduling and coordination to minimise disruptions and maintain high punctuality standards.

Punctuality statistics of SBB (state-owned cargo rail operator of Switzerland)

2022	2023	2024
91.4%	90.4%	87.9%

Source: Annual reports of SBB Cargo

2.1.4. Enabling timely accessibility of locomotives at inland terminals

Timely availability of locomotives to haul rakes from terminals is essential to maintain timeliness and service quality. A delay in the arrival of locomotives can result in a delay in departure from originating terminals, which in turn can increase the overall transit time of the cargo from the shipper to the destination, thus impacting rail service quality.

Although improvements have been noted in terms of locomotive supply at terminals, en route delays continue to pose a substantial challenge. When a locomotive breaks down mid-journey, the process of replacing or repairing it is often complex and time-consuming. This results in considerable delays without a clear timeline for service resumption. This issue is highly critical for trains operating on the DFC, which depends on the IR to address such disruptions; resolving these issues sometimes requires more time than desirable. To overcome these challenges, it is essential to manage the availability of locomotives around high-density routes, ensuring prompt response during breakdowns. In addition, the DFCCIL, in discussion with the IR, may consider developing its own locomotive capabilities instead of relying solely on the assets of the IR. By implementing these measures, the overall service quality of the IR network and the DFCs could be enhanced, minimising delays and improving reliability.

A clause in the model concession agreement (MCA) between CTOs and the IR allows for a rebate in case of a delay in the provision of locomotives at the train's point of origin. A similar clause can be drawn up for detentions of trains waiting for locomotives en route to incentivise the IR operations staff to prioritise container movements that are more crucially dependent on transit reliability compared with other forms of bulk and break bulk cargo moving on rail.

2.1.5. Need for optimising maintenance activities for improving rake uptime and asset availability

The MCA between the IR and CTOs states that the maintenance of the rakes owned by private train operators should be undertaken by the IR. However, it has been determined that maintenance activities require more time than expected, which impacts asset availability for CTOs as well as rake deployments for container movement. This indirectly affects the reliability of the service that CTOs can offer.

Need for improved maintenance practices: Each rake is required to undergo a) train examination (TXR), b) routine overhaul (ROH) and c) periodic overhaul (POH) inspection at regular intervals or after covering a certain predetermined distance. The frequency of ROHs and POHs is low compared with TXRs, which occur regularly. The details are presented in Table 2.

Table 2: Types of train examinations for maintenance: Frequency, location and duration

Type of maintenance	Frequency		Location	Maintenance duration specified in MCA
	First inspection	Subsequent inspection		
Closed-circuit rake examination	9,000 km or 30 days, whichever is earlier		Designated base depot	Within 6 hours of wagon handover
ROH	- 18 months - 24 months (01/22 - 05/22 mfgd)	18 months	Designated base depot	Not specified
POH	6 years	4.5 years	Designated base depot	Not specified

Source: National Rail Plan

Currently, the maintenance of each rake is undertaken by the IR only at an assigned base depot. Each intensive examination activity is expected to take a minimum of 6 hours as prescribed in the MCA; however, due to actual delays based on staff unavailability across all shifts, occasional shunting of rakes to examination –sites is required. Thus, the overall time spent exceeds the expected time and can be as high as 12–18 hours and, in some cases, even up to 24 hours. For ROHs and POHs of rakes, the limited capacity available at ROH/ POH depots means that there are instances in which rakes have to wait to be moved to assigned maintenance depots for days or even weeks. The lack of availability of spares, particularly for newer wagon designs, can also result in unpredictable rake detentions during the maintenance process

Industry insights

> There are delays in wagon return from maintenance as wagons need to return to designated base depots.
>
> **- CTO and terminal operator**

In addition to the detentions attributable to the rail maintenance process, another challenge is the fact that the actual asset owners (i.e. CTOs) have no control over the quality of maintenance. For instance, there have been cases in which rakes maintained for 9,000-km circuits faced damages during regular safety checks. Currently, **only the IR is allowed to conduct rake maintenance**, with no provision for private players to conduct independent maintenance. This results in private train operators having limited control over the time spent on rake maintenance and uncertainty in rake scheduling. As a result, the availability of rakes for subsequent loading becomes unclear and creates delays in the network.

Industry insights

Even after fresh examination, damages are reported in rakes during the subsequent trip, making the 9,000-km validity ineffective.

- CTO and terminal operator

To address these issues, the IR has undertaken measures such as increasing the time of examination for closed-circuit rakes from after 6,000 km of route traversed to after 9,000 km and starting base twinning for examinations[25] (though only on a limited trial basis for CONCOR at present). Liberalisation of some of these practices, such as twining or universalisation of bases and adding more time to closed-circuit validity so that the 9,000 km[26] permitted can be logged, should be considered urgently. Furthermore, to reduce delays, a limit should be enforced on the maximum time spent on maintenance so that CTOs can better plan and provide an assured transit time to their customers. However, to improve operational efficiency and decrease costs, enabling private players to undertake maintenance of the rakes can be considered a more permanent solution. Private maintenance will lead to the following specific gains:

1. Better asset utilisation: Private players who have inducted rakes can better control their asset utilisation. Higher wagon utilisation/availability will lead to higher revenue from the assets for the IR and lower life cycle costs for private companies.
2. Harnessing technology: Participation of private players will bring innovation and better technology to maintenance practices and improve the quality of maintenance and safety of the system.
3. Integration of wagon design and maintenance: Private participation will allow design owners to have control over maintenance. A system in which feedback from maintenance can be integrated into the design process will lead to overall improvement in designing and manufacturing processes, resulting in more robust wagon designs with a higher codal life, longer maintenance cycles and increased pay-to-tare ratios.
4. Infrastructure creation without additional capital outlay by the IR: Permitting private maintenance will attract private investment in an additional segment of the IR. In addition to expanding the maintenance capacity within the rail system, it will enable the IR to maintain its own growing fleet of freight wagons more efficiently.

2.1.6. Need for improving rail operations at ports by optimising handling processes and creating additional handling capacity

Detention of rakes at ports for loading /unloading containers is a challenge that CTOs face. This challenge impacts the timely availability of rakes for the next trip. Such detentions could be attributable to various reasons:

Industry insights

Port handling capacity is not attuned with the capacity that comes from rail, which is put on non-operational lines.

- CTO and terminal operator

- **Congestion at ports' container yards**: The sudden arrival of a large number of vessels simultaneously due to external factors results in challenges in evacuating containers from the port, thus causing congestion at the port and its rail yard. Congestion also limits the ability of the port to offer nuanced services to its customers, such as the ability to provide optimal rake loading in a proper first-in, first-out manner.
- **Insufficient capacity for handling of rakes**: The handling capacity of rakes per day is not consistent with demand, leading to detentions.
- **Inefficient management of rail operations**: Port terminals may be reluctant to perform inter-terminal shifts of cargo to manage the demand.
- **Damages during operations**: Wagons may be declared unfit when locks are damaged during handling operations, causing the wagon to be moved or detained at the R&D yard and delaying the movement of the rake.

The inability of ports to load specific container types by weight, as prescribed in the IR loading norms (especially for double-stack containers), hampers the efficient use of DFCs' capacity.

- The challenge: Containers are stacked at different locations and trains are loaded in real time, leaving limited time to select specific container combinations.
- Time constraints: Trains must be moved out quickly to accommodate incoming trains, making it difficult to optimise wagon loads.
- Capacity underutilisation: The DFCs' designed load capacity of 82 MT and BLCM trains' capacity of 70 tonnes per wagon cannot be achieved due to these constraints, significantly underutilising the DFCs' capacity.

[25] Indian Railways circulars
[26] Indian Railways circulars

To address these issues, ports need to plan and schedule the handling of containers more efficiently as well as optimise their processes to improve handling capacity. Moreover, port terminal operators need to better coordinate with CTOs to plan and schedule rake handling.

Although the IR and other agencies have already implemented several key measures, additional interventions are required, as summarised below:

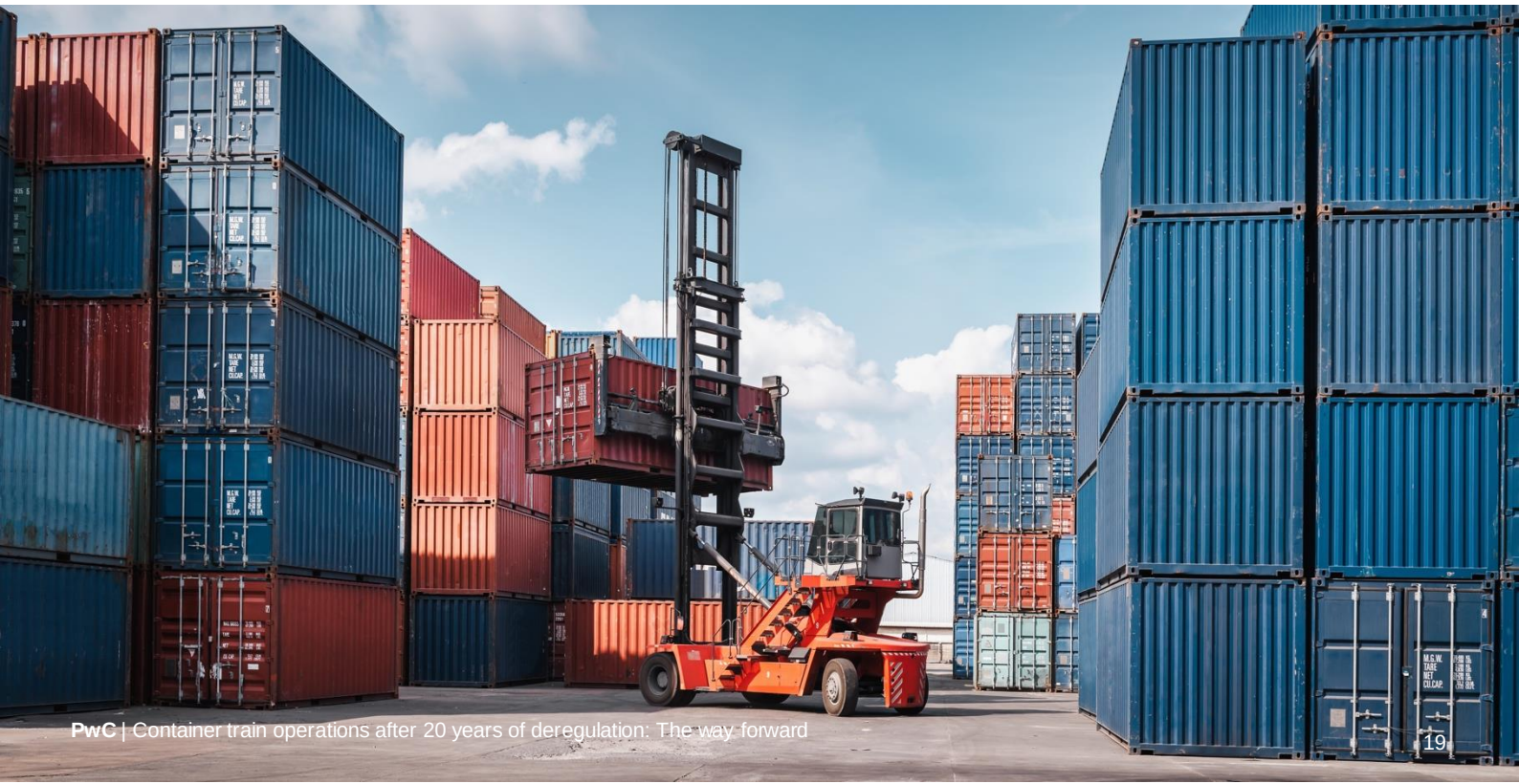
Industry insights

The average wagon load that we are able to achieve is barely 40 tonnes.

- CTO and terminal operator

Interventions to improve rake availability and service reliability

- Enforcement of prescribed time to complete maintenance activities: Maintenance often takes 12–18 hours because of the lack of availability of labour and delay in procuring spare parts; this time can extend to multiple days for detached units. Proper enforcement of the duration that has been prescribed in the MCA will be required.
- Similarly, introducing some form of duration commitments for ROH and POH cycles may need to be considered.
- Base twinning or opening-up of rake maintenance across the network (universalisation): Allow two or more base locations per rake to reduce the requirement to reposition rakes to a single base location for maintenance. This could help save considerable downtime and empty running per rake.
- Private sector-led maintenance: Opening up the maintenance of rakes for the private sector may improve the maintenance turnaround time by bringing in private sector efficiencies.
  - Need for optimised deployment of locomotives on high-density networks to reduce en route loco downtime
  - Need for DFC to build its own capacity of repair staff and locomotive deployment and reduce dependence on the IR
- To tackle port-related issues, port terminal and rail operators may:
  - collaborate to align handling capacities and schedules with port operations, ensuring smoother transitions of cargo.
  - adopt optimised container handling processes, including better planning for loading, unloading and inter-terminal shifts.



2.2. Access to container rail services

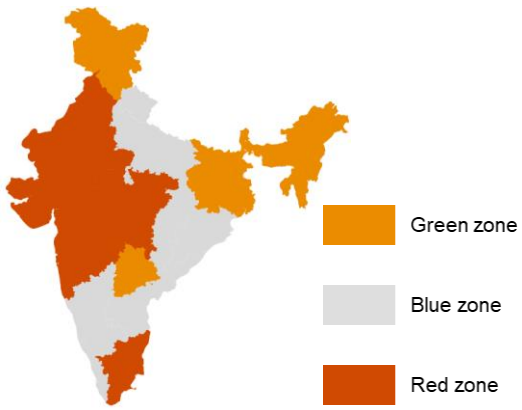
Currently, India has approximately 125 operational rail terminals[27] that can handle EXIM and/or domestic container operations, including inland container depots (ICDs), private freight terminals (PFTs), multimodal logistics parks (MMLPs), Gati Shakti Cargo Terminals (GCTs) and container rail terminals (CRTs). To support the growth of container traffic on rail, there is a need for greater terminal capacity not just at existing major cargo centres but also at upcoming cargo growth locations. Therefore, it is imperative to resolve issues related to terminal development to facilitate rail access. The key issues are as follows:

1. restrictions on establishing more terminals at high-demand locations
2. limited terminal network at lesser served location
3. lack of a single-window facility for establishing new container terminals.

Reviewing the Central Board of Indirect Taxes and Customs (CBIC) policy on additional terminals: The 2020 circular issued by the CBIC provides detailed guidelines for establishing ICDs, CFSs and air freight stations in India. It addresses the logistics sector's evolving needs due to increased cargo volumes and technological advancements. The policy categorises states into green, blue and red zones based on their logistics infrastructure as follows:

- Green zone: Includes 11 states and two union territories (UTs) with low logistics infrastructure, encouraging the development of new facilities
- Blue zone: Comprises eight states and two UTs, focusing on specific trade-generating locations with no existing or over-utilised facilities
- Red zone: Comprises nine states and four UTs, where ICD development is generally discouraged, particularly near seaports, to promote direct port delivery and DPE. However, the inter-ministerial committee may approve ICDs in trade-generating locations with high export and import potential.

Figure 9: Zones listed in CBIC policy



Sources: CBIC policy

The restricted red zone states and UTs primarily include tier-1 cities, which are major centres for production and consumption. Imposing a general restriction on ICD development in red zones and limiting it to stringent or exceptional conditions in blue zones slows down the pace of trade-based infrastructure development in areas where demand exists. Some locations within these states may be ready for new terminal development, which is being restricted due to the CBIC policy. Therefore, the criteria for approval in the red zone are subjective.

The policy also defines the facility space, design and capacity, which may lead to higher project costs. Therefore, ICD developers may be allowed to assess the market realities and design the facility based on the shape of the land parcel, railway line placement, estimated market demand and commodity profile.

The policy also mentions that no greenfield ICD shall be permitted to be established within 100 km of any existing ICD. This is restrictive and may lead to the development of monopolistic practices at existing locations, which are protected as no new facilities are permitted nearby.

Industry insights

> The last IMC was held seven months ago, on 9 September 2024. These long gaps often delay our terminal projects.
>
> - **CTO and terminal operator**

This policy does not offer any incentive to develop facilities in green zone areas, where demand is limited. If special incentives can be offered in demand-deficient areas, the development of suitable infrastructure can be promoted in such lesser served areas.

Therefore, we believe that this policy needs an overall review to better align it with market conditions and to make it less prescriptive and restrictive.

Need for improved terminal development across locations and simplification of established processes

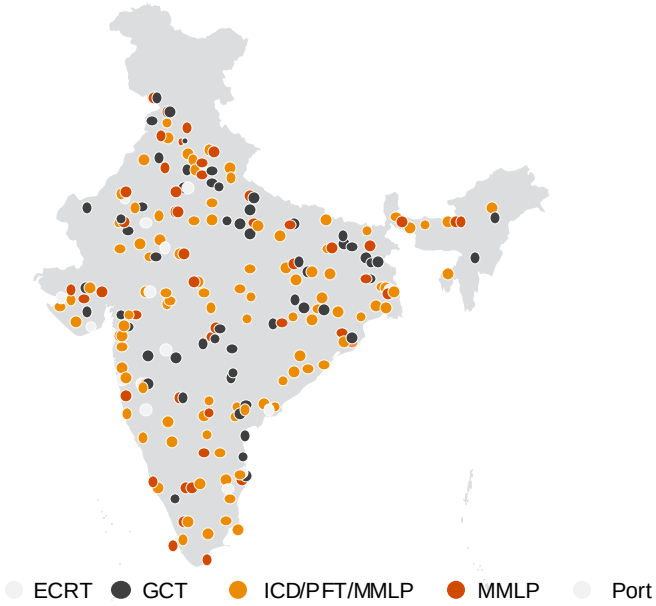
Need for more terminal capacity at lesser served locations: The current and planned terminal network locations shown in the map are spread across the Indian subcontinent; however, the development of terminals is concentrated in certain locations that have traditionally been cargo hubs – either around ports or deeper in the hinterland. As economic growth expands in the country, the cargo demand at these existing hubs increases; at the same time, it is expected that cargo demand in lesser served locations will also increase. Therefore, we believe that there should be sufficient supply planning in place to meet future growth.

[27] Indian Railways- Freight operations information system, and primary interactions with industry stakeholders

For these locations, larger terminals may not be required; small-to-medium-sized terminals may be sufficient to improve logistics efficiency.

To address this, the government has launched initiatives such as GCTs, exclusive container rail terminals (ECRTs). and MMLPs. Some of these terminals are already under development, whereas others are in the planning stage.

Figure 10: Operational and planned container terminals across the country



Sources: IR; PwC research and analysis

- Among the various initiatives, **87 GCTs have been commissioned to date, with a target of reaching 200 soon**. Today, most GCTs primarily handle bulk or break-bulk cargo and require some modifications for use in handling containers.[28]
- **More than 50 MMLPs have been planned, with 35 planned by NHLML** – of these, one at Jogighopa is already constructed and awaits operational commencement. In addition, three **MMLPs have been awarded at Chennai, Nagpur, Bengaluru and Indore**. The rest are at stages of bidding, direct project report, etc.[29]
- Approximately **23 ECRTs are also planned** for implementation in the coming years.[30]

The IR recently announced ECRT policy for notification of some existing goods sheds (capable of container handling operations) is aimed at expanding the network for cargo access at multiple locations. These terminals will remain as IR-owned public facilities with common user access exclusively for container operations.

ECRTs will be more efficient and will ease some of the existing difficulties with using CRTs. The ECRT policy tackles current issues as follows:

1. It allows terminals released by CONCOR and those currently idle to be notified exclusively for container operations at ECRTs.
2. It creates rules for the storage of containers at ECRTs to encourage multimodal containerised solutions.
3. It does not call for a change in the category of ECRTs from III to II or I based on increased container traffic volumes brought to such a facility.
4. It allows ECRTs to be nominated for hub-spoke operations.

The benefits of such ECRTs could be as follows:

1. Consolidation of cargo controlled/managed by different stakeholders at a single location
2. Optimal utilisation of infrastructure, thereby maximising earnings from terminals developed on ek public land
3. Avoiding wasteful expenditure on duplication of capacity and investments by different logistics service providers
4. Eliminating monopolistic practices
5. Reducing overall logistics costs

While the Government of India has undertaken substantial efforts to address the terminal problem, some additional ideas to improve terminal networks are provided below:

1. **Incentivise cargo-based terminal operators** – As the primary objective of the IR is to increase the share of railway haulage for cargo, it is important to attract cargo-owning or -controlling entities, including manufacturers, freight forwarders and logistics service providers, to such terminals. While such entities are already asked to share some terminal access dues with the IR as part of the GCT policy, **a scheme in which fresh cargo on the rail system is incentivised could help attract incremental cargo**. If bidders for GCTs, or even users of ECRTs, are offered a token share of rail freight generated for the IR at such locations, the overall systemic benefit from the development of such terminals would be considerable.

[28] Indian Railways circulars and tenders
[29] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1941381
[30] Indian Railways circulars

2. **Improvement/upgradation of facilities by potential users –** If any operator wishes to upgrade a facility with minor improvements to better serve the cargo, they should be allowed to do so at their own cost with no obligations. As a result, simple low-cost upgrades to facilities could become easier to implement. Providing some freight rebate to pay off the capital investment undertaken for such upgrades could further incentivise incremental freight volumes.
3. Based on the current GCT policy, **for conversion of existing terminals to GCTs** by an interested private party, all disputes related to companies and sister concerns of the interested party with the IR must be withdrawn. This condition may need to be diluted so that the benefits of GCTs can be made available to a wider variety of users without taking away their rights for dispute resolution on specific issues with the IR as per extant rules of fair play and natural justice.

Industry insights

> The time for hubbing operations needs to increase from 5 days to at least 10 days, and the inter-hub distance should be reduced from 500 to 100 km.
>
> - **CTO and terminal operator**

Establishing better and more terminals by creating a robust terminal network may enhance the frequency of services in the network and the efficiency of cargo consolidation or accumulation at the origin or destination terminals.

Need for a single-window solution for terminal development: The development of terminals is a complex process currently managed by various state and central authorities, with differing regulatory norms across regions. This variation creates significant challenges in navigating the approval process, often resulting in lengthy time frames – sometimes exceeding 4–5 years – for establishing a terminal. In particular, private developers experience difficulties in greenfield terminal development because of disparate state approvals and limited coordination between state and central authorities. Consequently, streamlined regulations are essential to support the efficient growth of terminal infrastructure.

To address these challenges, a single-window solution for terminal development can significantly streamline the approval process and facilitate the establishment of new infrastructure.

The proposed framework includes the development of a centralised digital portal along the lines of the Gati Shakti National Master Plan, which serves as the single point of contact for all terminal development applications, accessible to both state and central authorities as well as private developers. This portal should integrate the workflows of different regulatory bodies, thus allowing for simultaneous processing of various approvals to reduce redundancy and minimise delays. Establishing uniform guidelines for terminal development, harmonised across state and central levels, is important. This would involve collaboration between authorities to create a standardised framework applicable across regions.

The Government of India, through its notification granting infrastructure status to logistics, has rightly acknowledged the sector's central role as the backbone of economic growth and development. Logistics infrastructure, including MMLPs, ICDs, PFTs and railway goods sheds, serves as common user facilities and provides services that facilitate seamless trade and efficient movement of goods across regions. Logistics infrastructure projects, irrespective of ownership or development model (i.e. public, public–private partnership or private investment), may be recognised as projects of public interest and thereby become eligible for governmental support.

- These projects align with national strategic goals, including the National Logistics Policy, which seeks to reduce the logistics cost to GDP ratio and improve India's rank in the Logistics Performance Index. By facilitating efficient trade corridors and supply chains, these projects contribute directly to public welfare, even when initiated by private entities.
- Similar recognition has been granted to other private infrastructure projects, such as highways, airports and energy plants, in which public interest is paramount despite private ownership. Extending this treatment to logistics infrastructure ensures consistency in the policy framework and acknowledges the importance of this infrastructure to the economy.
- By considering logistics infrastructure projects as projects developed in public interest, the sector will be able to receive the following support:
  - Expedited land acquisition and resolution of right-of-way issues
  - Prioritisation of essential services provision, including water, electricity and environmental clearances
  - Facilitation of access to institutional financing and viability gap funding where required

The challenges described above underscore the need to address infrastructure bottlenecks and prepare for the rising demand to avoid operational disruptions. Although the IR and the Government of India have already implemented several key measures, the anticipated rise in demand will require more interventions, including those outlined below:

Interventions for enhancing asset availability and accessibility for better service quality

- **Adoption of a mixed approach to terminal development**: Every location may not be suitable for an MMLP; similarly, not all areas are ideal for a GCT or an ECRT. Depending on the cargo volume and local demand, a mix of large-, medium- and small-container handling terminals should be planned to ensure seamless operations and optimised infrastructure use.
- **Need for development of container terminals in tier-2 and tier-3 cities**: With demand increasing in locations beyond the current cargo clusters, it has become necessary to establish container terminals in these regions. This will facilitate the effective handling of cargo and prevent logistical bottlenecks.
- **Uniform policies and guidelines for terminal development**: To simplify and accelerate the development of container terminals, uniform policies and guidelines across states and central departments are essential. A standardised framework will streamline the approval process, reduce delays and foster coordination between state and central authorities.
- **Enable mini rake movement:** With more terminals, the network would also cater to smaller lots of goods. The frequency of mini rake services can be increased, and a mini rake load volume can be accumulated in less time.
- **Incentivise cargo-based terminal operators**: As the primary objective of the IR is to increase the share of railway haulage for cargo, it is important to attract cargo-owning or -controlling entities such as manufacturers, freight forwarders and logistics service providers to such terminals. While such entities are already asked to share some terminal access dues with the IR as part of the GCT policy, a scheme in which fresh cargo on the rail system is incentivised will be a more positive step towards attracting incremental cargo. If bidders for GCTs, or even users of ECRTs, are offered a token share of rail freight generated for the IR at such locations, the overall systemic benefit from the development of such terminals would be considerable.
- **Improvement/upgrade of facilities by potential users**: If any operator who wishes to upgrade a facility with minor improvements to better serve the cargo is allowed to do so at their own cost with no obligations, then simple low-cost upgrades to facilities could become easier to implement. Providing some freight rebate to pay off the capital investment undertaken for such upgrades could further incentivise incremental freight volumes.
- **Promote hubbing operations**: There is a market-expressed need to increase the time for hubbing operations from the existing 5–10 days and reduce the inter-hub distance from 500 to 100 km.
- **Facilitate conversion of existing terminals to GCT**: As per the current GCT policy, for conversion of existing terminals to GCT by an interested private party, all disputes related to companies and sister concerns of the interested party with the IR must be withdrawn. This condition may need to be diluted considerably so that the benefit of GCT terminals can be made available to a wider variety of users without taking away their rights for dispute resolution on specific issues with the IR as per extant rules of fair play and natural justice.

Global best practices for terminal development

The UK offers a good example of how public–private partnerships can strengthen rail terminal developments with the mutual strengths of both sectors. The **Strategic Rail Freight Interchange (SRFI) Policy** was established by the UK government to identify and develop locations suitable for inter-modal freight transfer. This policy is driven by market forces, with the private sector taking the lead for the development and management of inter-modal facilities while the government focuses on policy and the regulatory framework. The public sector undertaking, Network Rail, which owns and manages most of the rail infrastructure of Great Britain, collaborated with stakeholders from the logistics sector to accelerate SRFI delivery, explore funding options and establish appropriate infrastructure delivery mechanisms**.**

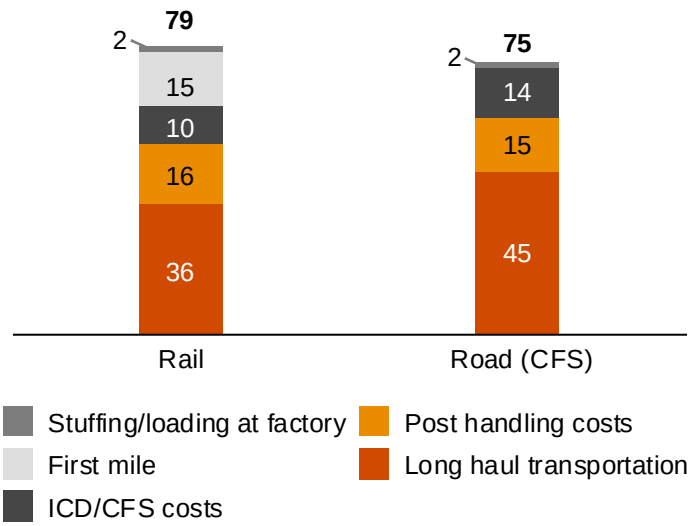
3

Assessing the cost of container rail services

In addition to service quality and accessibility, cost plays an important role in the attractiveness and growth of a logistics service. Therefore, we have analysed the inland logistics cost of container rail transport to identify factors affecting the overall economics and impact on the CTO business. It is also important to analyse this from the perspective of lowering the overall logistics cost of trade to align it with India's vision of reducing logistics cost in line with that of developed nations.

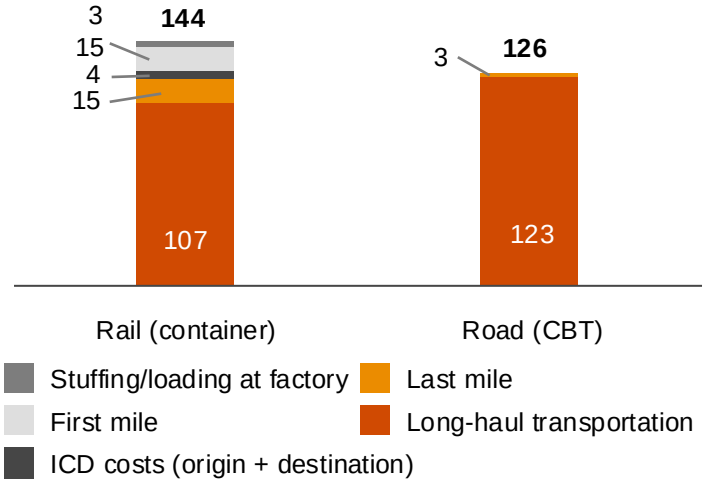
To assess the cost of the container rail service for customers, we examined the end-to-end inland logistics cost for certain sample routes by rail and road. By identifying key challenges related to the cost of service, areas of possible intervention were identified. The analysis was corroborated through discussions with industry stakeholders to ensure comprehensiveness of outcomes.

Figure 11: Logistics cost for inland transportation of 40 feet container loaded with 15 MT from NCR to Mundra (values in INR '000s)



Source: Tariff cards of logistics service providers, primary interactions with industry stakeholders and PwC analysis

Figure 12: Logistics cost for inland transportation of 25 MT cargo, from Morbi to Kolkata (values in INR '000s)



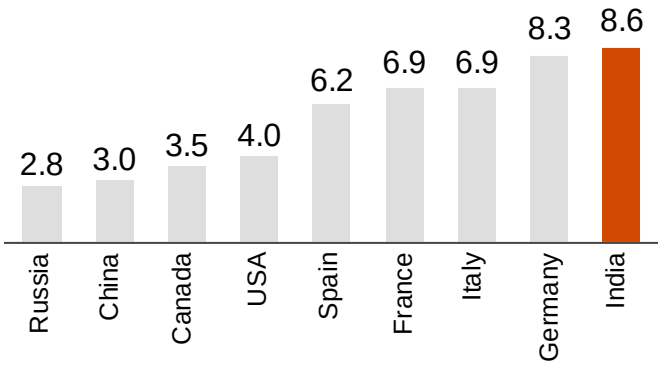
Source: Tariff cards of logistics service providers, primary interactions with industry stakeholders and PwC analysis

The fundamental difference in the two modes of transport is that while road-based transportation, such as trucks, offers door-to-door services, rail transport moves containers between terminals. Therefore, a rail-based container transport service also involves first and last mile transportation, as well as terminal handling. The cost of long-haul transportation is supposed to be typically lower for rail, which also compensates for the additional terminal handling costs and transportation from the first and last mile to keep the overall cost competitive with road transport. However, based on the analysis, the overall logistics cost for rail-based movement is more expensive than road-based container movement. In this regard, we have further analysed the areas of intervention that can address cost-related challenges and make rail more competitive with road transport.

To understand the cost of rail transportation services, we also conducted a global benchmarking assessment on the freight earned per ton-mile of transportation in some major economies. The data indicate that the freight rates charged for rail transportation in India are among the highest in the world on a per tonne-mile basis (after adjusting for purchasing power parity).

One reason is the cross-subsidisation of passenger fares with freight charges by the IR, leading to a higher cost of freight movement on rail compared with other major economies. This is a key factor impacting the logistics cost in India.

Figure 13: Rail freight revenue per tonne-mile, 2021 (INR)

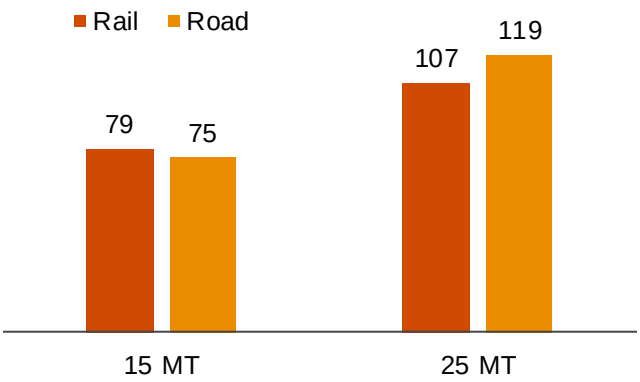


Source: International Comparison of Railway Freight Rates, prepared for Railway Association of Canada (RAC), 2023 (USD 1 = INR 85.9)

Another factor is the difference in the types of commodities that are carried on rail compared with road. The Indian rail sector has traditionally preferred heavier bulk commodities over long distances. Early on, the focus was on transporting raw materials, such as coal, iron ore and cement, to industrial centres. As a result, the IR implemented an operational policy in the 1980s that prioritised trainload traffic for bulk commodities and long-distance hauls while dismantling infrastructure such as marshalling yards required for wagon load movement. As a result of this policy, while the transit delays caused by wagon detention at marshalling yards were overcome, the commodities transported by rail were primarily reduced to bulk commodities.

As can be observed in, Figure 14, rail is more competitive with road when the cargo load of containers is heavier than 25 MT. For lesser loads, road transport is better in terms of cost.

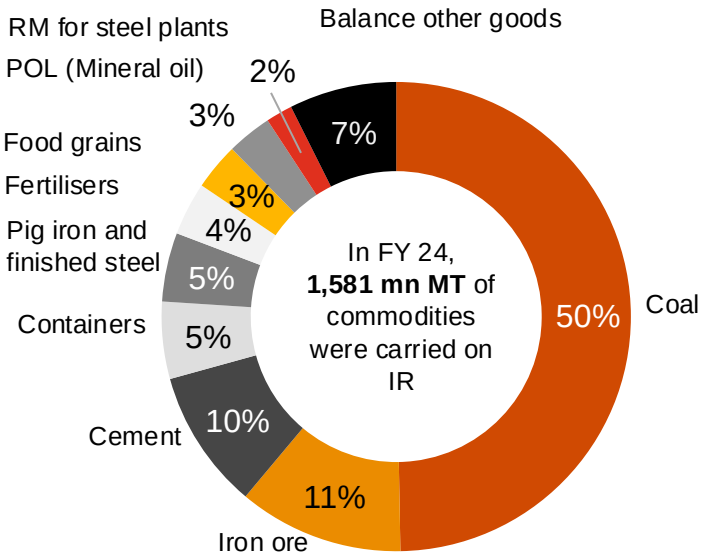
Figure 14: Logistics cost for inland transportation of one 40 feet container from NCR to Mundra (values in INR '000s)



Source: Primary interactions, PwC analysis

Currently, IR carries nine major bulk types of cargo, including containers, with coal having the largest share. Bulk commodities – such as coal; iron ore; and petroleum, oil and lubricants – have a higher carbon footprint. Considering India's ambition towards a green transition and net-zero targets, future growth in the transport demand of these commodities is uncertain. Therefore, to drive growth, IR must cater to a more balanced commodity basket with lighter and traditional heavier goods. Certain interventions on the pricing front are needed for rail to become competitive with road. In the subsequent sections, we have evaluated this and other aspects that impact logistics costs for rail movement versus road and proposed areas of intervention.

Figure 15: Commodities carried by the IR



Source: Indian Railways Yearbooks

3.1 Assessing rail haulage rates of the IR

Pricing mechanism for container train operations: Haulage rates are charged by the IR from the CTOs for transportation of rakes from point A to point B. Haulage charges are expected to cover the following costs, which the IR bears, to facilitate rail operations:

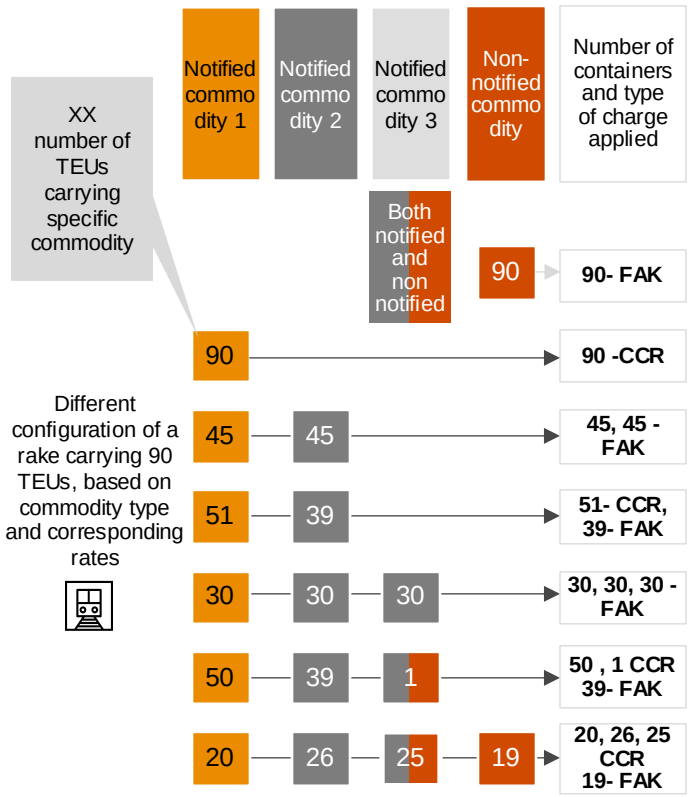
- Hauling service provided by locomotives owned by IR
- Terminal and marshalling costs
- Maintenance costs for wagons
- Track and signalling infrastructure

Currently, these charges are calculated on a per 20-ft equivalent unit (TEU) basis for different weight categories per container. For example, if a rake is carrying a diverse mix of commodities, charges are calculated based on three factors: the type of commodity cargo, the weight category of each container and the distance of transportation.

Commodity-based rates: Currently, of the 551 commodities permitted to be carried in containers, 510 are charged freight any kind (FAK) rates. The remaining 41 are charged container class rates (CCR), which differ from the freight tariff applied if the same commodity were transported in non-containerised form in other wagons.

These 41 commodities are considered 'notified commodities'. As of 2023, notified commodities include alumina, bricks and stones, cement, iron and steel, petroleum products and gases, slag, chemical gypsum, zinc concentrate, lead concentrate and soap stone powder.

Figure 16: Scenarios of rake configuration and haulage rate



Source: Indian Railways circulars

The policy circular considers factors such as the type of commodities in each wagon, the type of wagons and the different permissible load-carrying capacities for various routes. **Figure 16** illustrates how the type of commodities carried in a wagon (notified or non-notified) determines the haulage rates and how complicated the current applicable rate calculation can be for different cases. For example, if 51 containers are loaded with a notified commodity, such as iron/steel slabs, the CCR would apply to those 51 containers, whereas the remaining 39 containers loaded with non-notified commodities would be charged FAK rates. If three different notified commodity types were carried in 30 containers each, FAK rates would be applied.

Pricing mechanisms need to be simplified

Instead of the abovementioned approach, if the service fee for rake movement was based on the total rake load and the distance travelled, similar to practices in Australia and Germany, more containers of non-notified commodity cargos (and other non-containerised commodities) could be shifted to rail. This would enable container rail transport to compete with road transport by expanding the addressable rail market to include lighter cargo that currently moves almost entirely by road.

Some other issues related to the current pricing system can be summarised as follows:

- Discrete distance slabs in rating: Such slabs result in sudden jumps in haulage with the change of each slab. As a result, customers sometimes select shorter railway leads simply to avoid moving to a higher slab rate when there is a sudden jump in haulage rate. Replacing step-based pricing with continuous pricing based on a best fit function will lead to a simpler per-km pricing system without the jumps in pricing that currently occur with a change of each distant slab.
- Stability and transparency of tariffs: Although there have been as many as eight tariff revisions by the IR after 2007 and up to 2015, there have only been two revisions thereafter. Overall, rate increases have fluctuated from 2% to 22% in a single instance, and the approximate increase since 2007 has been 103%.[31]
- Port congestion and busy season surcharges have been used from time to time to raise rates without formal haulage charge modification announcements. There is currently a 10% busy season surcharge in force for all 12 months, which has been in effect since September 2023.
- Two additional weight slabs have been introduced, one for medium cargo in the 10–20 T category (w.e.f. November 2012) and one for very heavy cargo in the >30 T category (w.e.f. December 2014) in the IR haulage charges for containers. There are now as many as five weight slabs in the TEU category. The result is a more complicated rail haulage mechanism that reduces the pricing flexibility available with CTOs when setting market prices for the end users/customers.
- Empty flats and containers have generally been priced high at 60% to 65% of loaded rates (as seen in IR haulage rate circulars). Some discounts in empty haulage have been offered from time to time; however, these remain in the 55–60% range compared with loaded rates.

The experience of the container sector shows that the pricing framework has become increasingly fragmented and complex over time. While there are some low-hanging fruits and short-term requirements for change, in the long term, it is necessary to develop a simpler, more transparent and attractive pricing system.

Proposed short-term pricing interventions

- **Remove the differential pricing of FAK and CC rates** – The first step in simplifying the pricing process is to remove the FAK and CC rate differential and price all containers at a single FAK rate. IR could then create a small negative list of commodities that are restricted for container operators, and all other commodities would be opened up by default for exploring container movements. This would expand the market size and also add speed and flexibility to CTOs' decision-making when attracting new cargo to rail. This will also benefit the IR.

[31] Based on the analysis of Indian Railway Haulage Charge Circulars issued from 2007 to 2024

- **Remove disincentives for empty moves required for balancing wagon movements towards available cargo**
  - Domestic container circuits are typically built from cargo location 'A' to destination 'B' and then again from cargo location 'C' to destination 'D'; as both routes are loaded routes, empty repositioning is required between 'B and C' and then again between 'D and A' to complete the circuit. These empty moves, which are required to build cargo circuits, add to the cost of operations for CTOs. Such empty repositioning over 300–400 km may be discounted to enable the building of more viable cargo circuits and increase domestic business potential.
  - In the EXIM market segment, there is currently high imbalance in most EXIM circuits with high import volumes, which require movement of underframe wagons towards ports. Moreover, many hinterland locations, which have high export potential but limited imports, require a steady supply of empty EXIM containers from other locations to those terminals. Discounting empty flows to encourage movement of underframe wagons and empty inventory within the country from surplus to deficit locations would address the issue of imbalance and container shortage and contribute towards increasing overall loaded EXIM container volumes by rail.
  - IR has recently undertaken some steps by reducing empty haulage charges for tile movement. It allows a 50% discount in haulage charges of empty container laden rakes returning to the originating cluster after transporting tile traffic. Although such initiatives are welcome, wider implementation for more commodities is needed.
- **Encourage movement of LWC in containers** – The current rail pricing system favours heavier cargo and does not attract much light-weight manufacturing cargo. Two initiatives can be attempted to attract more LWC by rail:
  - LWC moves more as volumetric cargo and in 40-ft equivalent unit (FEU) as opposed to TEU boxes. Modification of the charge for FEU at 1.5 × TEU instead of 1.8 × TEU would better align rail pricing with global ocean freight pricing. This could make loading in FEU cheaper and more attractive for lighter cargo.
  - A more direct approach would be to offer a special discount on light-weight commodities (<20 T per box).

Industry insights

It is also important to create transparency and predictability in pricing by indexing haulage charges to certain cost/market parameters like fuel cost or WPI.

- **CTO and terminal operator**

- **Remove the weight of the container from existing charges** – Currently, the weight of the container itself, which is approximately 2.5 tonnes per TEU, is added to the chargeable freight across different weight categories. This leads to the carriage of dead weight and affects the competitiveness of rail versus road transport, in which the dead freight of the truck does not directly impact freight cost. Removing the 2.5 tonnes of dead freight by only considering cargo weight would increase the competitiveness of rail freight.
- **Pricing stability** – Clear timelines for the validity of freight rates should be announced with at least 3 months' notice in order to provide time to effect the change in long-term customer contracts.

Proposed long-term strategy: Trailing load-based pricing model for private train operators

As indicated above, for containerised cargo, the IR offers a weight slab-based 'box rate' as haulage that should be impervious to the commodity carried in the box. The IR also charges haulage for empty container wagons as well as empty containers.It publishes rail haulage charges through public notifications and provides haulage service in the form of access to its network (path), haulage by its locomotive, fuel (diesel/electric energy) and services of its train operating crew and its staff based at its stations. Therefore, the IR's haulage cost is not strictly dependent on the weight of each container but is a function of the trailing load of the train as a whole. Because of the public notification of haulage charges, the input cost for the CTO is known to their customers. This hinders the pricing freedom based on demand–supply dynamics and almost compels CTOs to resort to input-based pricing because the price charged is subject to scrutiny by their customers, having full knowledge of the applicable haulage charge. **Shifting away from a weight slab/box-based system to a train load rate will considerably simplify the pricing system. It will also expand the addressable market for rail containers to include more light goods by creating a suitable price mix for heavy and light cargo based on market conditions instead of a mere markup on published rail haulage charges.**

- This could give necessary pricing freedom to CTOs and help them maximise their business volume.
- The structure of such charging would also help CTOs to price the LWC at or below marginal cost while marking up heavy-weight cargo that has low-price elasticity.

- **Remove disincentives for empty moves required for balancing wagon movements toward. The pricing freedom could also be used to charge differentially based on imbalance or directional parameters.**
- **All of this would help the IR increase the overall cargo volume carried through CTOs and also increase its overall revenue potential from rail transportation of containerised cargo.**

To ensure that this system does not work against the revenue interests of the IR, such a trailing load rate could be based on historical data. A revenue-neutral model could calculate such a rate by dividing total revenue by the total number of loaded trains and provide a per-loaded-train rate that can be charged.

Such a train-based haulage charge could essentially be a function of the base empty haulage rate for a train combined with train load and distance. This rate could be tapered with increasing distance, and overall trailing load would also accommodate the benefits of double-stack and longer distance loading into the rate.

Considering the requirement to increase the share of manufacturing sector cargo, which tends to be lighter than and more volume-based compared with conventional bulk rail cargo, such a rating scheme would help attract higher container volumes by rail. Moreover, in accordance with the environment, social and governance and sustainability goals of many emerging private companies, a modal shift in favour of rail would encourage sustainable transport to reduce emissions throughout the supply chain.

3.2 Assessing factors impacting operational efficiency and cost of the trade

Better operational efficiency is required to improve asset utilisation and thus lower the cost of the trade.

Industry insights

Turnaround time for maintenance of wagons is a cause for concern for the sector as the productive uptime of the wagons is hampered if the wagon is not available.

- CTO and terminal operator

Challenges with current maintenance practices: Wagon maintenance must ensure they operate optimally and do not break down in transit. For private CTOs, maximising the uptime of their wagons to maximise return on investment for these assets is extremely important; however, some factors are currently impacting the overall rake uptime for the CTOs, such as cost and revenue generation ability. Some of these factors are discussed in Section 2.1.5, as they impact the quality of services.

- **Examination time and frequency:** The time spent on examinations (such as closed-circuit examinations) affects the schedule of container train operations and reduces rake utilisation.

Global best practices for freight tariff structure

Rail freight operations were reformed in most developed countries through participation in the private sector. Different countries used varying paths to private sector participation, but India can consider two common themes.

- **Separation of infrastructure from operations:** In this approach, private sector companies were invited to maintain rail infrastructure for operating freight trains. This separation of roles created clear responsibilities and increased accountability. Network Rail is the UK's infrastructure manager, while Freightliner is responsible for all aspects of running freight services.
- **Allowing the private sector to procure locomotives and maintenance of rolling stock:** This gave the private sector better control over their operations and helped optimise asset utilisation, improving overall service quality and timeliness for shippers.

As the freight train operators own the locomotives and are responsible for the maintenance of rolling stock, the only consideration they pay to the infrastructure manager is the 'track access charges'. These charges are intended to recover infrastructure costs, manage network capacity and encourage specific operational practices. Core components of track access charges include the following:

- **Train-kilometre (train-km):** This is a foundational charge based on the distance a train travels on the rail network – it may be a flat rate or vary based on factors like train type, speed and track quality. For example, in Germany, the train-km charge is adjusted according to the track category, whether express, regular interval or economy. In contrast, the charge in Latvia varies based on whether the service is domestic or international.
- **Gross tonne-kilometre charge:** This charge is calculated by multiplying the total weight of the train (including cargo) by the distance travelled to reflect the infrastructure deterioration caused by the train. Countries like Austria, Sweden, Finland and Switzerland apply this charge, while the Czech Republic uses a variable GTK charge.
- **Two-part tariffs:** Some countries employ two-part tariffs, combining a fixed charge (i.e. per train path or train-km, which was reserved) with a variable charge (based on GTK or train-km). This approach can increase per-ton-km costs for smaller trains. Although intended to reflect the use of network capacity, this system can be disadvantageous for smaller operators. Germany formerly used a two-part system but shifted to a single differentiated charge per train-km due to anti-competitive concerns.

Applying a gross tonne-kilometre charge on rakes in India without factoring in the type of commodity and the weight of each TEU can further simplify the current pricing mechanism, making it consistent with global best practices.

- **Base depot-related challenges:** The current guidelines for maintenance specify that wagons must be sent to designated base depots for closed-circuit examinations and to provide BPC. Sometimes, the movement to the base depot requires a long haul as empty flats, as the rake has completed its BPC validity some distance from the base depot. This requirement results in rakes being unavailable to serve customer demands as they are transported to and from these depots, causing a loss of revenue for CTOs and the IR. There is also an issue in getting permission to base trains at new locations where cargo is available, and there is demand for container services. Lack of maintenance capacity/staff often leads to refusal or extreme delay in granting basing permissions by the IR. This situation often leads to cargo loss to road transport, in which such restrictions on where trucks can be maintained do not influence the ability to address market demand. Liberalising basing conditions and moving towards private maintenance may address this issue.

Industry insights

> Refusal to base rakes where cargo exists is counterproductive. Maintenance should be determined by the location of the cargo rather than locating a maintenance facility and then seeking cargo nearby.
>
> - CTO and terminal operator

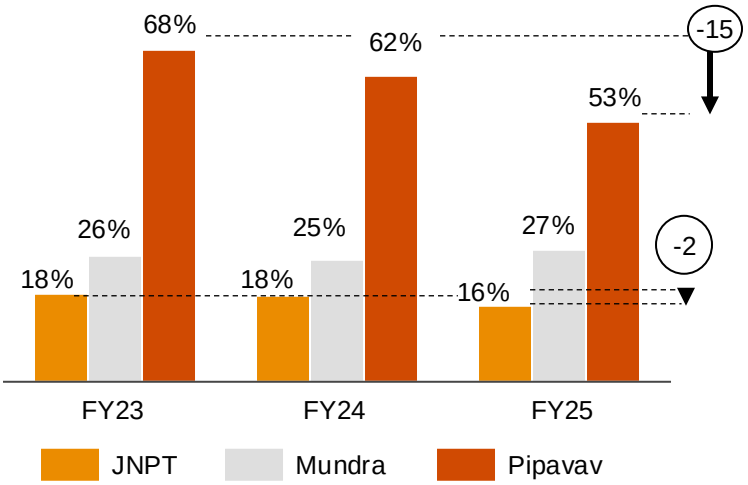
- **Dependence on th IR for staff and spares:** Based on the MCA, while private CTOs can own a maintenance facility, the required parts must be provided by IR, and wagon inspections are done only by IR staff. This aspect leads to delays and reduced rake uptime because of the unavailability of maintenance staff and/or parts. Furthermore, as per interactions, a challenge sometimes occurs in the quality of the spares provided by IR, which either further delays maintenance time or increases the frequency of maintenance activity.
- **The difference in the permissible capacity of wagons:** CTOs have invested in new wagons with higher carrying capacity, such as BLSS and BLCS. These wagons already represent approximately 20% of the total container wagon fleet,[32] likely increasing to more than 50% within a few years. The designed load-carrying capacity of these wagons is 17% higher compared with the older BLCM design; however, their current permissible carrying capacity on feeder routes to DFC is **15% lower than the axle loads allowed on DFC**. This situation prohibits optimal utilisation of wagons, as they must be loaded based on the capacity of the feeder routes.
- **Delays and en route stabling charges:** Stabling charges apply to CTOs for the occupation of railway lines when the origin or destination terminals cannot receive trains because of congestion.

The rate of stabling charge is INR 650 per wagon per day from arrival to removal. The CTO is liable to pay stabling charges to IR for the detention of rakes at a rail terminal beyond the permissible free time of four hours; however, the process established for stabling charges to be calculated and recorded may not be effectively followed in practice. As a result, the actual cause of stabling is usually not recorded correctly, leading to the levy of stabling charges on CTOs, even when they may not be directly responsible for the detention caused to their trains.

No reverse provision exists in the concession agreement that detentions caused by the IR due to delays in locomotive supply, stabling en route due to local capacity and operations issues or resulting from congestion caused by reasons other than those attributable to container operators will be examined and result in some form of rebate to operators whose assets are detained. Ensuring that for any detentions en route of more than 4 hours in any one instance, reverse charges at the same rate as prescribed by the IR for the levy of stabling charges could be credited to the CTO as detention charges for their owned rolling stock. This approach is a possible solution to create equity and accountability for stabling charges.

- **Delays at ports:** During interactions with industry stakeholders, the point of congestion and delays in handling rakes at the ports was also raised. Some of these issues have already been discussed in Section 2.1.6. As a result, the rail coefficient has stagnated or declined across different ports.

Figure 17: Reduction in rail coefficient for key ports in the northwest region of India



Source: PwC analysis and literature review

- **Delays due to locomotive delivery:** Currently, CTOs in India cannot own locomotives. This situation differs from the private freight train operators of other countries, such as Germany, the US and the UK, where the freight train operators can exercise more control over their delivery schedules by owning and operating their locomotives. In India, the supply of locomotives is the responsibility of IR; thus, CTOs depend on these locomotives' availability. Since the locomotives are shared between passenger and freight trains, their availability is uncertain, particularly when a locomotive breaks down en route. This situation translates into a loss of revenue because of the reduced number of trips and penalties for delayed delivery.

3.3 Reviewing pricing of liner haul for rail-based inland logistics services

Global shipping lines have significantly facilitated India's import and export growth. These lines have been key stakeholders in the Indian logistics landscape, establishing direct ocean services and augmenting capacity with larger vessels and increasing calls to Indian ports. They have optimised international transit times and opened new markets with access to new origins and destinations, expanding the global reach of Indian exporters and importers. Global shipping lines have also invested in the Indian port sector, upgraded infrastructure and enhanced efficiency at Indian ports.

Shipping lines are expanding their global footprint across the logistics chain by offering more end-to-end solutions to customers, including inland logistics and transport services. Regarding rail-based EXIM container services in India, two primary practices have traditionally been followed for end user pricing, which is borne by the cargo owners (exporters/importers). For the import stream, shipping lines primarily book containers with rail operators for delivery up to ICDs in the hinterland. In this 'line haul' model, shipping lines declare an inland haulage charge (IHC) for a levy on the consignee, the end user/import cargo owner. For exports, the practice of 'merchant haul' has typically been followed – the exporters directly pay for the inland rail haulage to container rail operators. Recently, with shipping lines expanding their footprint across the logistics chain, their role on the export side has also deepened, and most of the major lines have moved from a 'merchant haul' to a 'line haul' model in the export direction.

Need for review in pricing of liner haul for rail-based inland logistics services

Integrating services offers the benefit of single window operations; however, one area of concern in this 'line haul' model has been the extent of a markup over service cost, which results in considerably higher costs for the end user (Indian exporters/importers). This situation has significantly increased the overall logistics cost for Indian trade and skew in favour of road transport, which becomes cheaper than rail. Data in the following table indicates the extent of this markup and emerges as a concern for the cost of logistics for Indian trade.

The data in the table below indicate that in the case of CTOs, the percentage markup over Indian Railway's haulage averages 22% (for this data set). Of this, at least 10–12% represents operators' capital investment and operating cost, leaving an approximately 10% operating margin for container rail operators. In comparison, the markup for shipping line inland haulage on the liner haul model is as high as 56% (averaged for this data set) over the cost paid to CTOs. This high margin has no backing investments in rolling stock or terminal infrastructure. Although no precise data are available for markups levied by freight forwarders or cargo consolidators, these also contribute towards increasing logistics costs.

Table 3: Shipping line IHC compared with CTO tariff and IR haulage charges for export cargo moving to Mundra Port (INR)

Origin station		Export		Import	
		20 ft	**40 ft**	**20 ft**	**40 ft**
Dadri	Average IHC of shipping lines	58,300	86,500	47,100	90,800
	Markup over CTO tariff	76%	73%	48%	82%
	CTO benchmark tariff	33,200	50,000	31,900	50,000
	Markups over IR haulage	19%	21%	15%	21%
	IR haulage	27,846	41,303	27,846	41,303
Ludhiana					
	Average IHC of shipping lines	60,300	85,200	47,100	82,400
	Markup over CTO tariff	59%	59%	28%	52%
	CTO benchmark tariff	7,900	53,700	36,900	56,300
	Markups over IR haulage	16%	11%	13%	17%
	IR haulage	32,552	48,241	32,552	48,241
Jaipur	Average IHC of shipping lines	43,500	65,200	37,900	68,000
	Markup over CTO tariff	78%	42%	23%	53%
	CTO benchmark tariff	24,400	46,000	30,900	44,500
	Markups over IR haulage	11%	41%	41%	36%
	IR haulage	21,963	32,634	21,963	32,634

Source: Shipping line/container operator websites; IR haulage circular; PwC analysis
Note: IHC data has been adjusted to exclude the port handling charges to be paid by lines at the ports.

These high IHCs also contribute a considerable share of the overall end-to-end freight cost to the hinterland cost. For example, against an average ocean freight cost of approximately 1,400 USD for exports to Western Europe or imports from China for a 20-ft container, an additional 50% (~USD 700) is borne as hinterland cost for moving a container from the NCR to a Gujarat Port. In other words, transporting a container by rail to/from the Indian hinterland to/from a Gujarat Port is about half as expensive as the cost of transporting the same container by water from Indian shores to far flung destinations in Europe or the far east.

Lines bear some cost for inventory management of their containers, and some support services are provided; however, it is worth determining if the nature of these costs warrants such a high markup on what are essentially higher logistics costs being borne by cargo owners/end users of logistics services. The existing IHC regime increases hinterland logistics costs, making Indian exports more expensive and discouraging rail-based cargo movements. These factors work against the goals of the Government of India in terms of reducing logistics costs, promoting exports and enhancing rail modal share in freight.

Industry insights

> Shipping lines sometimes refuse to allot empty containers for export if liner haul is not accepted by shippers.
>
> **- Cargo owners**

While the choice of service providers and dependence on market dynamics is important for operational efficiency, market dominance in ocean service availability leads to significantly higher costs for Indian exporters/importers, which must be addressed. Accordingly, greater transparency/visibility on the extent of markups and clear availability of choice for end users (both exporters as well as importers) to select an operating model between merchant and line haul are areas of concern that may be considered by the Government of India as part of its overall initiative to promote Indian exports and reduce logistics costs.

Incorporating these data into the annual LEADS studies that report inter-state competitiveness can help identify locations with lower costs and may offer solutions to improve ROI for Indian investors in this sector. Furthermore, the Government of India plans to launch a national container shipping carrier, Bharat Container Line, to reduce dependence on foreign-flagged vessels and strengthen India's control over the country's EXIM trade. Considering that such an initiative will take time to evolve, the government will need some near-term action to address this pressing challenge.

Industry insights

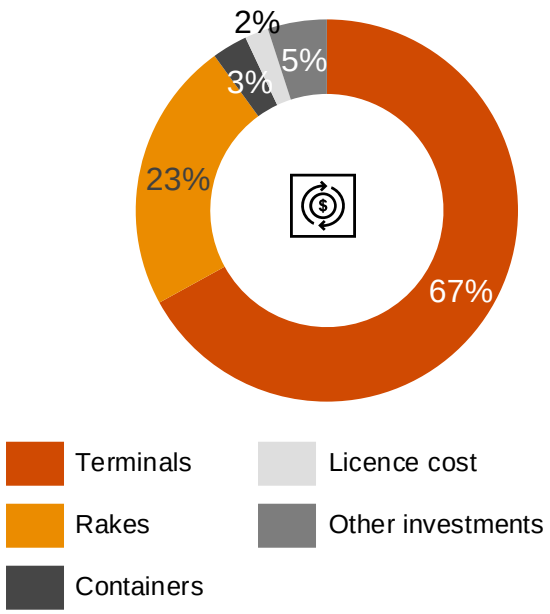
> In order to get more discount from CTOs, in some instances, lines differentiate between IHC for different ICDs in the same location to push cargo to a particular location.
>
> **- CTO and terminal operator**

3.4 Reviewing fixed costs for licence renewal and customs office recovery

Licensing cost and other capex: When licences are issued, the licence fee for CTOs is between INR 10 and 50 crore,[32] depending on the selected route category. Most licences were issued in 2007 (15), and a few additional ones (6) were issued in the subsequent 18 years.[33] As the original licences are now coming up for renewal, the fees need to be finalised. The MCA allows for a 10-year renewal upon a 'maximum' payment of half the original fee – because this is a maximum payment, it is possible to be lower or even 'zero' for such a licence renewal. As a parallel, the IR currently charges no licence fee for other schemes (such as AFTO and LSFTO) involving private wagon investment akin to the container sector. Thus, the recent decision announced by IR that all CTOs must pay 50% of the original licence fee for renewing their licence for the next 10 years leads to a disparity with the AFTO/ LSFTO segments.[34] The additional licence renewal cost will cause financial pressure on the CTOs, who have already invested heavily in assets, such as rakes and terminals.

Accordingly, removing this requirement for any additional fee payment for renewal will promote fair business practice and increase confidence in the long-term viability of private sector participation and growth.

Figure 18: Proportion of capex invested by CTOs

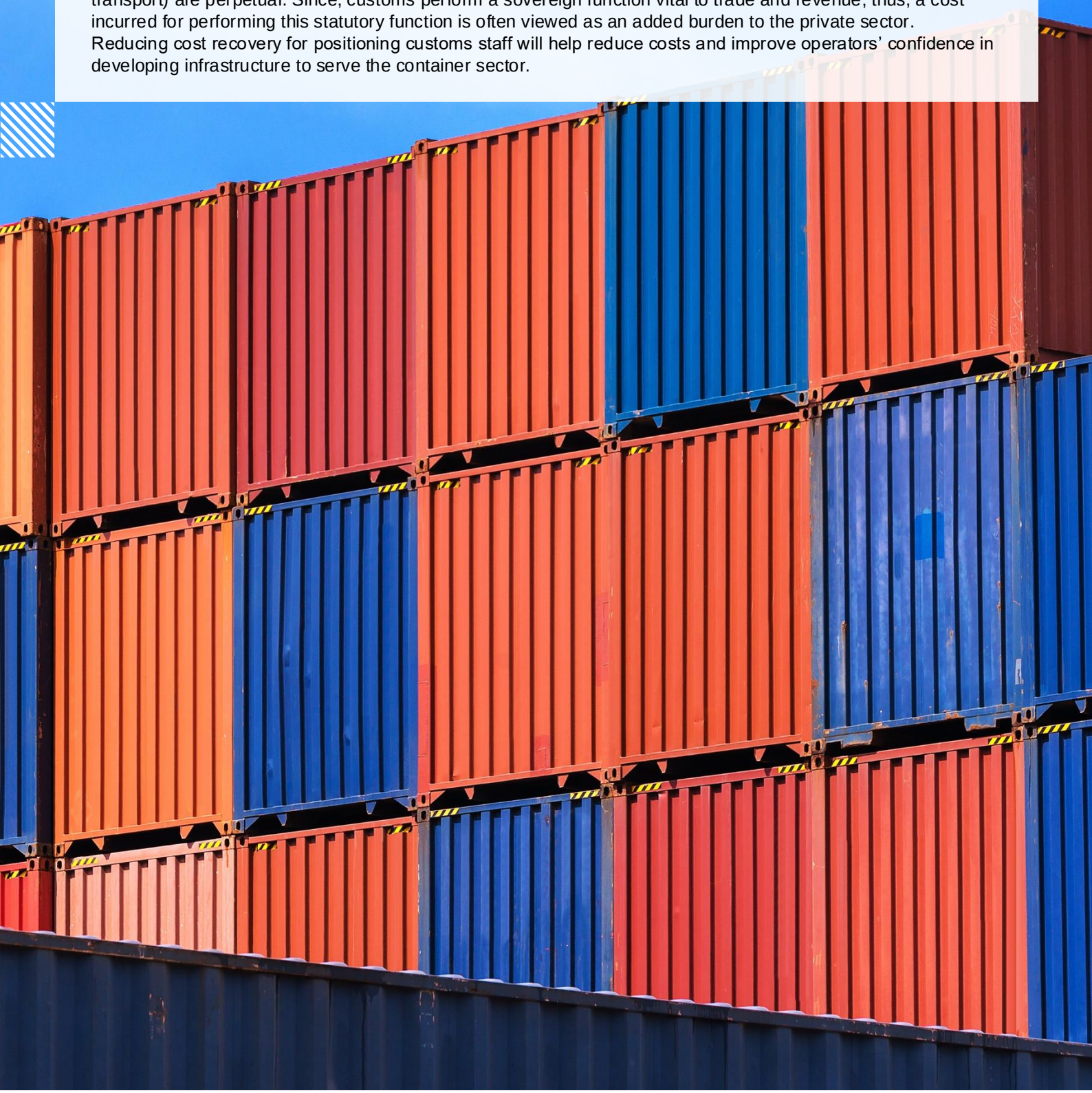


Source: Primary interactions with industry stakeholders

32 Indian Railways circulars
33 Primary interactions with industry stakeholders
34 Indian Railways circulars

Regulations related to terminal development and cost of customs office: The current policy for setting up terminals is described in Section 2.2. The current policy also mandates terminal operators to pay for the salaries of the customs staff stationed at the ICDs until the terminals reach handling volumes of at least 7,200 TEUs/year.[35]

These costs at least have a volume-linked time cap; however, other costs (such as providing office facilities and transport) are perpetual. Since, customs perform a sovereign function vital to trade and revenue; thus, a cost incurred for performing this statutory function is often viewed as an added burden to the private sector. Reducing cost recovery for positioning customs staff will help reduce costs and improve operators' confidence in developing infrastructure to serve the container sector.



35 Indian customs policy circulars

4

Summary of recommended interventions

This report examined some of the key issues impacting the performance and operations of the container rail sector in India. While there has been growth, it is below expectations and subdued due to various factors. Network capacity challenges have impacted transit reliability, speed and asset availability, which are needed to meet market demand and improve overall service quality. These inefficiencies, and to some extent, the regulatory framework, have impacted the cost of container rail service. Long-term solutions, such as capacity enhancement, pricing and regulatory reform, are critical; however, we believe some short- and medium-term interventions could promote growth, reduce customer costs and increase the modal share of container movement by rail.

Proposed interventions to improve speed and transit reliability of service

Long term

The rail network must enhance capacity and separate freight and passenger lines on high-utilisation routes.

- Develop DFCs on routes where freight train movement share is high and likely to grow.
- Ensure feeder lines to the DFC network are technically compatible with double stack, axle load and other parameters, expediting feeder route and DFC integration.
- Ensure that future DFCs support double-stack container operations.

Short term

Change the double-stack restrictions to permit maximum load ability and speed utilisation for all container wagon designs across DFC and non-DFC routes.

A transit-committed rail service between O-D pairs could also result in a reliable rail service.

Stabling charges may be reviewed for better alignment, and a reverse charge mechanism for rake detentions due to IR-related delays could be explored.

Detentions for locomotive supply (especially concerning providing locomotives after en route stabling) should be monitored. A similar delay charge mechanism for providing locomotives for originating trains at terminals should be considered.

Interventions enabling better availability of rakes

Long term

Private sector-led maintenance: Opening up the maintenance of rakes for the private sector could help improve the maintenance turnaround time by introducing private sector efficiencies.

DFC needs to build its capacity for repair staff and loco deployment and reduce dependence on the IR.

Short term

Enforcement of the prescribed time to complete maintenance activities: Maintenance often takes 12–18 hours[36] due to challenges in the availability of labour and spare parts, which can go on for multiple days. Proper enforcement of the duration prescribed in the MCA would be required.

Some form of duration commitments for ROH and POH cycles should be considered.

Base twinning and opening-up rake maintenance across the network: Liberalise permission of rake locations and allow two or more base locations per rake to reduce the requirement to reposition to a single base location each time for maintenance.

There is a need to consider implementing processes that bring accountability and transparency to locomotive supply and the stabling of trains including through reverse pricing mechanisms to avoid any unnecessary idling of rolling stock as productive assets.

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36 Primary interactions with industry stakeholders

Ports to collaborate with rail operators: To align handling capacities and schedules with port operations for making rail plans, ensure smoother cargo transitions

Ports to adopt container handling processes which permit specific loading of containers as per customer requirements

Interventions for improvements in the terminal network

Adoption of a mixed approach to terminal development: Every location may not be suitable for an MMLP. Similarly, not all areas may be ideal for a GCT or an ECRT. Depending on the cargo volume and local demand, a mix of large-, medium- and small-sized container handling terminals should be planned to ensure seamless operations and optimised infrastructure use.

Long term

The need for developing container terminals in tier-2 and tier-3 cities: As demand grows in locations beyond the current cargo clusters, container terminals must be established in these regions to help handle cargo effectively and prevent logistical bottlenecks.

Improvement/upgrade of facilities by potential users: Simple, low-cost facility upgrades will become easier for any operator who wishes to upgrade a facility with minor improvements – they can do so at their own cost with no obligations. Providing some freight rebate to pay off the capital investment for such upgrades could further incentivise incremental freight volumes.

Short term

Uniform policies and guidelines for terminal development: Uniform policies and guidelines across states and central departments are essential to simplify and accelerate the development of container terminals. A standardised framework will streamline the approval process, reduce delays and foster coordination between state and central authorities.

Enable mini rake movement: More terminals will allow the network to cater to smaller units of goods. With mini rakes, the frequency of service can be increased, and a mini rake load volume could be accumulated in less time.

Incentivise cargo-based terminal operators: The primary objective for the IR is to increase the share of railway haulage for cargo. Therefore, attracting cargo-owning or controlling entities, such as manufacturers, freight forwarders and logistics service providers, is important to such terminals. A scheme where fresh cargo on the rail system is incentivised will be a positive step towards attracting incremental cargo. If bidders for GCTs, or even users of ECRTs, are offered a token share of rail freight generated for IR at such locations, the overall systemic benefit from developing such terminals would be considerable.

There is a market-expressed need to increase time for hubbing operations from the existing 5 to 10 days.

Per the current GCT policy, for converting existing terminals to GCT by an interested private party, all disputes related to companies and concerns of the interested party with the IR should be withdrawn. This condition may need revisions so the benefit of GCT terminals will be available to a wider variety of users without eliminating their rights for dispute resolution on specific issues with the IR based on extant rules of fair play and natural justice.

Pricing interventions

Short term

Address disincentive for empty moves required for balancing wagon movements towards available cargo, 300- to 400-km leads for domestic traffic and leads in imbalanced directions for EXIM movements.

Simplify pricing mechanisms for container haulage by IR by removing the differential pricing of FAK and CC rates.

Encourage the movement of light cargo in containers by modifying the charge for FEU to make it more attractive for lighter cargo. Furthermore, a direct discount on light commodities (<20 T per box) from current rates would be a more beneficial.

The container weight could be removed from existing charges, reducing 2.5 tonnes of dead weight charges and allowing greater competitiveness with road transport.

Pricing stability: There is a need to announce timelines for rate validity with at least 3 months' notice for changes in rail tariffs to accommodate long-term customer contracts. It is also important to create transparency and predictability in pricing by indexing haulage charges to specific cost/market parameters, such as fuel cost/WPI.

The issue of high markup on inland haulage under the liner haul model should be addressed by providing greater transparency and choice for service providers to end users. This approach can address the issue of landed cost to customers on end-to-end tariffs of ocean shipping.

To address the impact of administrative costs, removing the cost recovery for the positioning of customs staff and withdrawing the decision to charge another 50% renewal fee for the CTO licence would significantly improve trade confidence.

Long term

The cost of operation is essentially based on trailing load; thus, there is a strong case for a rail haulage charge for any private train operation for the entire train load. This approach would increase pricing flexibility for the CTOs and help maximise their business volume.

At its simplest, a revenue-neutral model would calculate such a rate by dividing total revenue by the total number of loaded trains run and creating a per-loaded-train rate to be charged. Such a train-based haulage charge would essentially be a function of a train's base empty haulage rate combined with train load and distance. Tapering the rate with increased distance and overall trailing load would also accommodate the benefits of double stack and longer distance loading into the rate.

About FICCI

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