

# **A CASE STUDY ON INDIA'S DEDICATED FREIGHT CORRIDOR AND THE CHALLENGE OF WINNING BACK HIGH-VALUE CARGO FROM ROAD TRANSPORT**

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## **THEME & TITLE**

Theme: Balancing India's environmental and infrastructure ambitions with the commercial realities that actually move freight from road to rail.

Title: "Green Freight, Grounded Reality? Examining Whether India's Dedicated Freight Corridor Can Win Back High-Value Cargo from Road Transport."

## **EXECUTIVE SUMMARY**

India built one of the biggest rail projects it's ever attempted — 2,843 km of electrified, freight-only track linking major industrial regions, meant to finally pull cargo off the road, since rail is cheaper and more fuel-efficient, yet trucks still dominate. And here's the thing: even with over 90% running, the corridor mostly carries what rail always carried well — coal, cement, steel, foodgrain. Electronics, pharma, garments, e-commerce, the high-value stuff, mostly still rides trucks. Drawing on government data and one operator who cracked this, the study argues green infrastructure alone doesn't win that freight — service does.

## **INTRODUCTION**

Indian Railways runs the world's fourth-largest network and rail is about as energy-efficient as freight moves get, yet trucks still carry roughly 60-65% of India's freight tonnage against rail's 27-28%, despite rail costing less per tonne-kilometre. The government's answer was the DFC, a purpose-built, electrified line meant to move freight faster, cheaper, and with a much smaller footprint — Indian Railways estimates roughly 2.25x lower emissions over 30 years versus business-as-usual. But here's the catch this case explores: infrastructure alone doesn't change how a business ships its goods. What follows looks at why, and what might actually shift that.

## **BACKGROUND AND CONTEXT**

### **From Infrastructure to Adoption**

Approved in 2006, the DFC took nearly two decades to build, slowed by land acquisition and, later, Covid. Its two arms — Eastern, from Ludhiana to Kolkata, and Western, connecting JNPT and Gujarat's ports to Delhi — span 2,843 km across nine states, and over 90% is now operational. The idea was simple: give freight its own track and cost advantages would pull cargo off the road. Mostly that's worked for cargo rail already handled well, moving record volumes (1,670 million tonnes in 2025-26). What's lagged is the harder shift: high-value, time-sensitive cargo, which is really this study's focus.

## INDUSTRY CONTEXT

India's logistics costs have dropped a lot this past decade, roughly 8% of GDP now, down from the 13-14% long seen as a drag on manufacturing and exports, thanks to GST, FASTag, e-way bills, and highway upgrades under PM GatiShakti. Trouble is, nearly all of that came from making roads more efficient, not from shifting freight to a cheaper mode. Analysts think India's squeezed most of the easy wins out of roads already, and that a real 5–7-point shift from road to rail could still protect 0.5-0.8% of GDP — which, for exports, is not a small number.

## THE DATA SO FAR

| Metric                                             | Road        | Rail                       | Notes                                                              |
|----------------------------------------------------|-------------|----------------------------|--------------------------------------------------------------------|
| Share of India's freight (tonnage)                 | ~60-65%     | ~27-28%                    | Waterways carry under 2%; the rest is a rounding gap across modes  |
| Cost per tonne-km                                  | ₹2.5 - ₹3.0 | ₹1.5 - ₹1.8                | Rail is roughly 30-45% cheaper per tonne moved over long distances |
| GHG emissions (DFC vs business-as-usual)           | Baseline    | ~2.25x lower over 30 years | Based on Indian Railways' own carbon footprint analysis of the DFC |
| Government target for rail's freight share by 2030 | -           | 45% (from ~35-36% today)   | National Rail Plan / PM GatiShakti goal                            |

Put together, these numbers tell a clear story: the corridor has nailed the cost and emissions math, but hasn't cracked adoption for the cargo India most needs to move. Next, a look at why.

## METHODOLOGY AND ANALYSIS

This study leans entirely on secondary sources — government and Railways data, World Bank and NCAER assessments, industry coverage of DFC volumes, plus one documented case of a private operator running high-value cargo on the corridor. No shipper surveys or Railways interviews were done here; think of this as a desk-based strategic read rather than fresh primary research.

## FRAMEWORKS APPLIED

Three lenses shaped the analysis: comparing cost, emissions, and freight share across road and rail to size up the problem; a gap analysis separating what the DFC has already delivered, bulk volumes and faster transit, from what it hasn't, a real high-value cargo share; and a close look at one private operator's rail service, to see what actually gets a shift to happen outside a policy document. Together they dodge a common trap: judging a project purely on tonnage. By tonnage alone the DFC looks like a clear win; by cargo mix, the picture gets more complicated.

*“The corridor has made rail better at carrying the cargo it already handled, but it has not yet persuaded road-dependent businesses to shift their freight to rail.”*

A 2024 survey of shippers and freight forwarders, using discrete choice modelling, found two things matter most when businesses pick rail over road: on-time performance and cost. Big companies are also far readier to shift onto the DFC than small and mid-sized ones. That

matters for what comes next — the barrier isn't that people don't know the DFC exists, it's whether they trust it to show up on time with cargo that can't afford delay.

## **SOLUTIONS AND IMPLEMENTATION STRATEGIES**

Indian Railways and its private partners really have two paths here, and they carry pretty different risk-return profiles.

### **Path A: Let Scale Do the Work**

Here, Railways just keeps expanding DFC capacity and bulk volumes, betting that as the network matures and its cost edge becomes obvious, high-value shippers will eventually migrate on their own, the way coal and cement did. It needs almost no new investment in service design, but risks leaving high-value cargo stuck on the road indefinitely, since the real barriers — last-mile gaps, unreliable scheduling, specialised handling — don't fix themselves just because there's more track.

### **Path B: Build Service Infrastructure First**

This path puts money into the last mile first: rail-linked logistics parks, dedicated container trains, guaranteed delivery windows, digital tracking, before pushing bulk capacity further. It goes straight at the adoption gap, but needs capital and coordination across several agencies, and risks slowing the bulk gains already won if resources get pulled away from core freight operations.

## **RECOMMENDED APPROACH: SERVICE-LED, CARGO-SPECIFIC INVESTMENT**

Neither extreme really serves India well. Lean too hard on Path A and the DFC's green advantage stays locked into cargo it was never at risk of losing; lean too hard on Path B and Railways' capacity gets overstretched. The sensible route treats high-value freight as its own market: building logistics parks at key junctions so shippers need only a short local trip, running dedicated fixed-schedule container trains on DP World's model, adding digital tracking and delivery guarantees since reliability drives mode choice more than cost, and starting with large manufacturers already readier to shift before chasing smaller shippers.

## **RESULTS AND RECOMMENDATIONS**

### **Key Findings**

The DFC has hit the marks it was built for — cost, transit time, emissions — but that hasn't yet pulled high-value cargo off the road. What has shifted is mostly bulk commodity traffic rail was already good at; electronics, pharma, retail, e-commerce mostly haven't moved. Where it has worked, like DP World's rail service for Reliance on the Ahmedabad-Jamnagar-Mundra route, it took a private operator actively building consolidation and scheduling around the corridor. And since large companies are readier to adopt than small ones, a phased approach makes more sense than a blanket push.

### **Recommendations**

The recommendation is straightforward: keep expanding the DFC's bulk capacity, but treat high-value cargo as its own market needing dedicated trains, last-mile infrastructure, and reliability guarantees, not something that'll migrate on its own once track exists. Success should be measured by high-value and containerised cargo share, not just total tonnage, so the adoption gap stays visible instead of buried under strong bulk numbers. Get this right and the DFC keeps its lower-cost, lower-emission edge while closing the gap, because a green

corridor that only carries cargo already destined for rail delivers a fraction of what it was built for.

## EXPECTED OUTCOMES

If these recommendations hold over the next three to five years, expect a gradual rise in high-value and containerised cargo on the DFC, starting with large manufacturers and retailers already leaning that way, then spreading to smaller shippers as reliability proves itself. That moves India closer to its 2030 target of 45% rail freight share, up from roughly 35-36% today, and helps unlock that 5–7-point road-to-rail shift worth up to 0.8% of GDP in logistics savings.

## LIMITATIONS OF THIS STUDY

Worth flagging: this study rests entirely on secondary, public data, government reports and industry commentary, not internal Railways data, fresh shipper surveys, or interviews with DFCCIL or private operators, so treat it as an external, evidence-based read rather than an insider one. Figures for modal share and logistics cost vary a bit across sources depending on methodology, so ranges are used where sources disagree. And since the Western corridor isn't fully complete, some of this gap might simply narrow as remaining sections come online.

## CONCLUSION

The DFC is a genuine engineering and policy win, a green, electrified freight backbone already moving record volumes at a fraction of road's emissions cost. But high-value cargo shows that building the track was the easier half. The harder half is convincing businesses built around trucks' speed and flexibility that rail can now match that reliability door to door, not just track to track. What's needed isn't more corridor, it's the service layer around it: the terminals, the schedules, the guarantees that turn a green freight corridor into a genuine commercial choice for the cargo that matters most.

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