“Outcome-Driven Terminals Are the Key to Reviving MSME and Agri Exports”

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“Dynamic Freight Windows Could Break India’s Road-Rail Deadlock”

Intro: When landslides choke lifelines, when freight sits idle for want of smarter schedules and when billion-rupee upgrades risk becoming stranded assets—the answers can’t be quick fixes. In this hard-hitting conversation with **Sunita Prajapati, Joint Director at ASSOCHAM**, this week on **Socio-economic Voices** we unpack how to turn vulnerable rail links into climate-positive corridors. In this exclusive conversation with **Mahima Sharma** of **Indiastat**, she also shares how to make private industry pay (and profit) from green logistics and why governance-not just engineering-will decide if India’s next railway boom leaves no valley, village or cargo cluster behind. Take a read...

MS: With Barak Valley’s connectivity crisis leaving over 40 lakh residents stranded and fares surging due to fragile transport infrastructure, what long-term financial, environmental and governance mechanisms would you propose to create resilient all-weather multimodal corridors in the northeast?

SP: Residents of Barak Valley—over 40 lakh people—have been repeatedly stranded by landslides-hit rail and roads. Moreover, the airfares are spiking to ₹15,000–18,000 one-way between Silchar and Guwahati. As per my understanding, a layered approach—dedicated funding, resilient engineering, environmental safeguards and accountable governance—can build all-weather multimodal corridors that finally deliver year-round connectivity and equitable development to Barak Valley. The development of proposed Greenfield high-speed corridor will improve the connectivity to Barak Valley region from the main land am sharing a few steps that need to be taken:

Financial proposals

- Establish a Connectivity Revival Fund with Central-State matched financing, dedicated to landslide-proof rail and road upgrades.
- Introduce subsidised UDAN flights during surface transport disruptions, with regulated fares capped by DGCA/MoCA to avoid profiteering.

Environmental measures

- Land-slide mitigation along Lumding–Badarpur: install geo-barriers, improved drainage, slope stabilisation informed by drone-LiDAR and TLS surveys.
- Prioritise the Lanka–Silchar rail corridor (via Chandranathpur) which follows lower, geologically stable terrain compared to the hill section.

Governance frameworks

- Create a **central monitoring dashboard** under PM Gati Shakti to track project timelines and budget use — publicly visible on predefined query based mechanisms.

- Delegate decision-making powers to a **Barak Valley Regional Connectivity Board** comprising local officials, civil society and technical experts.
- Mandate **transparent time-bound targets:** complete Jatinga-Harangajao East-West Corridor by January 2026, Lanka–Silchar rail DPR execution within six months.

MS: Despite South Western Railway's rising freight operations and efforts like freight customer meets, challenges such as nighttime restrictions and local industrial mismatch persist. How would you design a tariff and scheduling overhaul to support region-specific freight ecosystems while reducing dependency on road transport?

SP: South Western Railway's freight loading touched a record **45.6 million tonnes in FY 2024–25**, with strong volumes from JSW Steel and cement clusters. Yet, **nighttime iron-ore restrictions** (6 pm–6 am) in Karnataka and weak last-mile links for newer industrial zones like **Tumakuru–Mysuru** still hurt rail's competitiveness (TOI).

So here's a suggestive practical solution.

First, allow **dynamic, corridor-based tariffs** within fixed limits. Let zonal managers offer local discounts to clusters like Ballari steel or Bagalkot cement to shift short-haul cargo from road to rail. This removes the one-size-fits-all rate issue.

Second, develop **"Freight Express Windows"**—pre-dawn and post-midnight slots for rake movement. To bypass the 6pm–6am ore restrictions, get a state nod for "silent green corridors" using electric locos and restricted honking near habitats.

Third, link tariff discounts to **Volume Assurance Contracts (VACs)**, giving clients 5–10% lower rates in exchange for guaranteed rakes per month.

Fourth, expedite the **Dedicated Freight Corridor (DFC) spur extensions** to link Koppal, Hubballi and Tumakuru, where multimodal parks are planned by 2026 (The Hindu).

Fifth, **there is a need to identify high-traffic routes** where performance can be improved while the major industry players should come together to plan a common route chart to increase the number of rakes and reduce cost.

Together, these steps can localise policy, boost efficiency and help SWR compete head-on with road logistics.

MS: After clearing the Patna–DDU section for 130 kmph operations, congestion remains a bottleneck for throughput. What economic model would best support funding and fast-tracking third/fourth line projects on saturated corridors?

SP: See, as per my understanding of the functional solution, I would like to propose using a **customer-funding plus hybrid annuity model**. Why, because together, customer-funding plus HAM provides fast-track financing. Freight clusters around Patna–DDU corridor—minerals, coal, cement—would benefit. Paying customers fund capacity. The government covers rebate liability. Private partners build efficiently. I am sharing the deeper aspects now:

Patna–DDU survey for third/fourth line costs ₹7.8 crore. Trains cleared at 130 km/h but throughput still limited by single/double track congestion.

Indian Railways' Participative Policy offers a **customer-funded capacity model**. Large freight customers co-pay for third/fourth line, then receive volume freight rebates until invested capital plus interest is recovered.

That model aligns with actual beneficiaries and ensures rail bears no upfront burden.

Next, use a **hybrid annuity model (HAM)**. Under this, Indian Railways pays ~40% of cost upfront; private investors build, operate and maintain lines under BOT. The operator receives annuity payments over the concession period.

This spreads risk and brings private capital into long-gestation corridor works. And the three-step -combined model accelerates construction. It unlocks rail capacity quickly. It reduces dependency on road transport. And it aligns economic incentives across stakeholders.

MS: The Indian Railways is moving toward AI/ML for predictive maintenance, with plans to introduce automated video inspection systems. In a highly unionised and legacy-bound system, what institutional safeguards would ensure transparency, cost efficiency and stakeholder trust in AI deployment?

SP: Indian Railways has begun rolling out **Machine Vision Inspection Systems (MVIS)** via an MoU with DFCCIL. In my view, they would need certain institutional safeguards to ensure that AI systems remain **transparent, cost-efficient and trusted** in a legacy and unionised environment. Institutions must embed **robust governance layers**. So they need to surely take some latest measures:

A. Indian Railways and DFCCIL have signed an MoU for four MVIS units to automate rolling stock inspection using AI/ML—but there is **no public evidence** of an independent AI oversight board, union-involved governance panels or third-party certification frameworks being set up. **So they need to set up an independent AI oversight board**, with members from Railway Board, unions, CRIS, DFCCIL and safety domain experts. They review algorithms, data accuracy, bias and false-alarm rates.
B. In another example: The Danapur division's in-house AI pilot at Ara depot also lacks formal mechanisms for transparent audits, RTI-reporting on performance metrics or mandatory reskilling of staff with union participation. **Thus the Railways require pilot testing and public audit reporting**. Share anonymised performance metrics: detection rates, errors, costs, downtime saved. Use RTI filings and public dashboards. This builds stakeholder trust through transparency.
C. The MVIS rollout remains in early phase: four units under DFCCIL's responsibility. There's no mention yet—publicly—of phased regional implementation conditional on cost-benefit validation, nor digitally signed audit logs or standardised data protocols that preserve integrity while respecting operational confidentiality. **Thus, the Railways needs to mandate third-party evaluation before scale-up**. Independent labs must verify reliability, ROI claims, maintenance cost-savings of ~20-30% and downtime reduction of ~30-50% predicted in maintenance literature.

D. Kavach train protection system is being rolled out separately, but it's unrelated to AI governance—it doesn't include explainability, bias review or stakeholder councils. So the railways also need to have better **staff reskilling programmes**. Train existing inspection teams to operate AI/ML dashboards, interpret alerts and collaborate. Preserve jobs and reduce resistance.
E. Enforce **data standardisation and audit logs**. All MVIS detections must be timestamped and signed digitally. Consider using zero-knowledge proofs to verify process integrity without exposing proprietary data.
F. Adopt a **phased, cost-controlled rollout**. Begin with four MVIS units on freight corridors per MoU. Expand only after verified cost and safety gains.

To summarise, the key issues remain largely unaddressed as of July 2025. We need to do more...and we must keep doing better.

MS: With smart sensors and AI deployed to track wildlife movement on the Dehradun–Motichur stretch, how can we scale ecological safety without affecting capital velocity and rail economics, especially in biodiversity hotspots like the Western Ghats and Terai region?

SP: We must start with clear data. The Motichur–Raiwala stretch now has a 15 km AI-powered Distributed Acoustic Sensing (DAS) system. It detects elephants, leopards and other wildlife crossing near tracks and sends immediate alerts to loco pilots, station masters and forest staff. It covers five critical crossing zones and activates alarms and audiovisual alerts on detection. The pilot begins in July 2025.

Scalability must preserve rail economics and capital velocity. I am sharing five steps that would be helpful. The steps are towards ecological safety design scales by focusing on spot-based deployment, modular tech, cost-sharing and wildlife-data governance. It preserves rail capital velocity, protects biodiversity in major ecological zones and keeps freight economics intact.

First, we layer systems. Combine fibre-optic DAS with thermal AI-cameras at key zoological hotspots in Terai or Western Ghats. These reduce false positives and extend detection range up to 60 km.

Second, deploy modular systems on demand. Install sensors where crossings cluster. Use data-driven thresholds so freight speed reductions occur only when animals are detected. This minimises delays.

Third, share infrastructure with rail corridors. Use existing fibre and telemetry to support both safety and track health (landslides, fractures). This spreads capital cost across safety and maintenance functions.

Fourth, engage local forest units. Use alerts to coordinate train slow-downs smartly. Human teams manage animals post-detection.

Fifth, record and monetise environmental performance. Reduced wildlife deaths lower litigation risk. That can attract green financing or carbon credits.

MS: As the government pivots infrastructure focus towards rail with a proposed ₹2.9 –3 trillion railway budget, how would you calibrate this shift to avoid stranded assets in road transport while ensuring holistic multimodal growth?

SP: India's proposed ₹2.9–3 trillion railway budget marks a historic tilt toward rail infrastructure over highways. Road transport sees only a 3–4% rise (~₹2.87 trillion) in the same period.

I would initially lay emphasis on having **conditional road-maintenance endowments**. States building last-mile roads into rail terminals earn grants only until connectivity stabilises. That avoids idle road assets once rail freight capacity arrives. Why do I assert this? Because, though **108 multimodal logistics terminals** have been announced, most are still under development. Several face delays due to land or environmental clearances. Few are operational and rest are in phase of their development.

A recent **MoU in Uttar Pradesh** between the state and Indian Railways has piloted logistics integration, but this is **not yet a national-level model** or policy shift. It is an early experiment, not a system-wide reform. Thus, **the capital should flow into logistics parks and multimodal corridors. Develop MMLPs alongside Dedicated Freight Corridors and PM-Gati-Shakti's port/mineral/energy axes.** This merges road and rail use, keeping roads meaningful connectors rather than redundant trunk routes.

The government has initiated some **PPP-based logistics corridor planning**, but as of mid-2025, most of these projects are either under review or in the tendering stage. Actual construction or asset deployment has not begun in most corridors., Thus, India then also needs to implement **phased rail corridor commissioning**. Expressway projects start only after freight capacity on nearby rail links is proven. That reduces overlap, targeting efficient modal division.

Key suggestions like performance-linked road grants, phased expressway approvals based on rail readiness or distance-based road-use fees to encourage modal shift have not been introduced in official logistics policy or Budget implementation. **Thus, next we need to incentivise modal shift via economics. Impose a road-use charge per**

tonne-km beyond 300 km while subsidising rail freight rates on DFCs by volume discounts. This softly nudges long-haul shipments onto rail.

Lastly, pursue **flexible asset re-deployment**. Where highways lose utility, reuse them for regional feeder USCs or urban transit arteries. Avoid stranded roads by handing assets to local bodies or repurposing for public transit niches. While **Dedicated Freight Corridors** are progressing, there's no active tariff integration or multimodal scheduling strategy that aligns road–rail operations holistically.

MS: With 108 multimodal cargo terminals planned under PM Gati Shakti, utilisation rates remain uneven. What outcome-based performance model or public–private incentive system would you design to boost terminal efficiency, especially for low-volume MSME and agricultural exporters?

SP: Let's be clear—India's 108 multimodal cargo terminals under PM Gati Shakti were a significant step by the government towards integrated logistics. But utilisation levels vary across locations, the groundwork has been laid, and momentum is steadily building as more regions begin to tap into their full potential. . Terminals near ports and industrial hubs are busy; others, especially those meant for MSMEs or agricultural exports, remain underused. The issue isn't infrastructure—it's alignment with economic geography and incentives.

What we need now is an outcome-driven model. Terminal operators should be rewarded not just for building capacity, but for bringing in consistent cargo flows—especially from smaller players. Lease structures must link returns to throughput. Set clear volume slabs: if an operator handles 10,000 tonnes a year, base rate applies. Going beyond that, they earn rebates or revenue share from the Railways.

Also, create reserved time slots on the freight corridors for agri and MSME cargo, where volumes are lower but time sensitivity is higher. Public–private partnerships can work well here—but only when contracts include provisions for warehousing, cold storage and shared logistics platforms.

At present only ~77 terminals are active and more than 200 are planned by DFCCIL under PPP by FY26. Private terminals like New Sanjali on the Western DFC show the path: connect to industrial clusters, ports and highways and automate handling. Real efficiency comes when contracts are **volume-verified, incentive-aligned and region-sensitive**, especially for agri and micro traffic.

MS: The new rail link to Maruti's Manesar plant is projected to reduce carbon emissions by 175,000 tonnes annually. Should such "private industrial sidings" be made mandatory under green zoning laws and how could carbon credits and blended finance be leveraged to scale this nationally?

SP: The Maruti Suzuki plant in Manesar now boasts India's largest in-plant railway siding, cutting roughly **175,000 tonnes of CO_2 emissions** per year and saving **60 million litres of fuel annually**. With capacity to dispatch up to **450,000 vehicles a year**, it links directly to the Western DFC and serves 17 hubs across 380 cities.

Should industrial sidings become mandatory under green zoning? Absolutely. They deliver measurable environmental gains, ease road congestion and promote multimodal logistics aligned with PM Gati Shakti vision.

To scale this nationally, let's introduce a **carbon-credit mechanism tied to sidings' verified emission reductions**. Firms that build and run efficient sidings earn credits—tradable or redeemable against corporate green obligations under India's emerging carbon market. **Pair this with blended finance facilities**. A public fund could offer concessional debt or equity for green logistics infrastructure, co-financing basis carbon credit potential and anchoring demand via export-linked throughput guarantees. **Regulatory incentives could include expedited environmental clearance or bonus floor area ratio for developers building sidings in industrial zones**. Link dues or lease concessions to verified rail tonnage shifted from road. That's how you scale private rail sidings and deliver real climate impact.

MS: The recent freight pricing reforms aim to attract short-haul cargo below 300 km, but capacity and unit economics remain constraints. How would you structure a dynamic pricing mechanism for freight, including seasonal discounts or auction models, without undermining the long-haul cross-subsidy system?

SP: We must not overlook the deeper facts, you see. India's freight sector faces structural constraints in 2025.

- Short-haul pricing reforms aim to win cargo under 300 km, but network congestion, low average goods speed (~40 km/h) and over-utilised main lines limit yield.
- Freight tariffs remain among the world's highest per tonne-kilometre, due to cross-subsidy of passenger fares (~47 %) and fully-distributed cost pricing.
- Modal shift to rail stalls at ~26–28 % share of freight, with road handling about 60 %.

A dynamic pricing mechanism would anchor around a minimum tariff floor preserving revenue for long-haul traffic. **Short-haul corridors** could offer calibrated discounts tied to utilisation thresholds and seasonal cargo flows—cement peaks, harvest time—and limited auctions for premium slots. **Auctions allocate scarce early-morning or night rake slots at premium**, while leftover capacity sells at standard short-haul discount. That ensures demand-driven allocation without eroding long-haul economics.

Marginal-cost pricing pilot studies could run on under-utilised branch corridors once accrual costing is mature. DFC expansion offers faster transit and lower costs, enabling pricing flexibility in connected corridors. This combination preserves cross-subsidy integrity, helps attract shorter-distance cargo, increases utilisation and avoids cannibalising long-haul rates.

MS: With projects like Burhwal–Gonda 4th line and Ratlam–Nagda 4-laning approved at a cost exceeding ₹1,800 crore, how would you align private capital into these low-margin, high-social-return segments—particularly in regions with high rural dependence and poor economic diversity?

SP: Burhwal–Gonda's approved fourth line spans 55.75 km at ₹796.3 crore, while Ratlam–Nagda's third and fourth lines cover 41 km at ₹1,018 crore. See we cannot overlook the fact that these are strategic upgrades, yet yield thin commercial margins. Rural reliance and weak economic diversity make pure private investment unlikely. **The lesson from recent PPP rail logistics shows that tailored risk sharing with structured cash flows can unlock capital. So what needs to be done?**

a) Design a hybrid annuity model

Government commits a 40 percent viability-gap fund, ensuring fixed annuities to private partners. Premium revenue sharing triggers over pre-set freight volume thresholds. Freight corridors like these move coal, cement, containers, agri-produce and reduce diesel use by 7.5 crore litres and CO_2 by 38 crore kg in year one alone—equivalent to planting 1.5 crore trees. That is a real societal return.

b) Contract aggregators—agrarian cooperatives, rural warehousing clusters—into ten-year volume guarantees.

This will assure minimal throughput, letting operators recover structured annuity income. Encourage private partners to lease logistics parks or terminals under concession frameworks tied into PM-Gati-Shakti planning. Amrit Bharat station upgrades along these lines further enhance multipliers by improving station infrastructure and connectivity.

The above strongest steps will blend financial viability with inclusion, climate efficiency and rural development in a sustainable model.

About Sunita Prajapati

Sunita Prajapati is the Joint Director at ASSOCHAM, based in New Delhi, where she leads policy advocacy, government affairs and stakeholder management. She spearheads national initiatives, notably organising ASSOCHAM's National Conference on Logistics & Warehousing for Viksit Bharat (April 2025), focusing on green logistics and sustainable supply chains. With prior experience at FICCI and PHDCCI, she has consistently worked on industry-government partnerships, capacity building and sectoral policy development. Her core strengths lie in commerce, logistics and sustainability policy. An alumna of IIM Kozhikode, she has also held senior advisory roles at PHDCCI, specialising in corporate affairs and public policy engagement.

About the Interviewer

Mahima Sharma is an Independent Journalist based in Delhi NCR. She has been in the field of TV, Print & Online Journalism since 2005 and previously an additional three years in allied media. In her span of work she has been associated with CNN-News18, ANI - Asian News International (A collaboration with Reuters), Voice of India, Hindustan Times and various other top media brands of their times. In recent times, she has diversified her work as a Digital Media Marketing Consultant & Content Strategist as well. Starting March 2021, she is also a pan-India Entrepreneurship Education Mentor at Women Will - An Entrepreneurship Program by Google in Collaboration with SHEROES. Mahima can be reached at media@indiastat.com