

INDIAN TRANSPORT SYSTEM: FACING VARIOUS PROBLEMS IN MAHARASHTRA

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Abstract : The transport infrastructure of Maharashtra, one of India's foremost economic engines, represents an integrated, multimodal network encompassing road, rail, air, and maritime systems. As a core driver of the state's projected ₹51 lakh crore GSDP, its transport architecture supports rapid industrialization, regional integration, and socio-economic mobility. Maharashtra possesses an extensive road network spanning over 3.37 lakh kilometers, fortified by a vast network of national and state highways. The Maharashtra State Road Transport Corporation (MSRTC) remains a critical rural lifeline, deploying a fleet of approximately 15,512 buses that transport over 8.7 million passengers daily. The rail infrastructure extends across 6,310.94 kilometers, anchored by the Central and Western Railway zones in Mumbai, alongside expanding metro systems in Tier-1 and Tier-2 cities like Mumbai, Pune, Nagpur, and Nashik. Aviation networks are anchored by Chhatrapati Shivaji Maharaj International Airport (CSMIA)—handling over 52.8 million annual passengers—complemented by expanding airports in Pune and Navi Mumbai. Strategically situated on the Arabian Sea, the state's maritime trade is driven by the Jawaharlal Nehru Port Authority (JNPA) and the Mumbai Port Trust (MbPT). Despite these structural strengths, the transport eco-system faces severe challenges, including urban traffic congestion, inadequate vehicle-to-population ratios in public transit, fiscal vulnerabilities within state-run transport undertakings, and infrastructure deficiencies. This paper examines the structural importance, estimated sectoral income capacities, and key systemic bottlenecks characterizing Maharashtra's contemporary transport landscape.

IndexTerms - Road Transport, MSRTC, Rail Transport, Indian Railways, Air Transport, Maritime Logistics, JNPA, Infrastructure Vulnerabilities, Economic Contribution.

1. Introduction

The historical evolution of transportation in India highlights its foundational role in governance, societal integration, and commerce. Ancient trade routes established during the Indus Valley and Gangetic civilizations laid early blueprints for connectivity, which were later institutionalized by the Maurya and Gupta empires through organized highway networks and postal systems. During the medieval era, the Delhi Sultanate and the Mughal Empire expanded this infrastructure by constructing strategic arterial roads, bridges, and caravanserais to protect trade corridors and pilgrimage routes. The advent of the British colonial era introduced industrialized transportation networks. The inauguration of the Great Indian Peninsular Railway in 1853—the precursor to Indian Railways—marked a structural paradigm shift, primarily serving administrative consolidation and colonial trade extraction.

In the post-independence era, transportation planning shifted toward balanced regional development, economic self-reliance, and connecting remote rural peripheries. Modern market integration owes much to pioneering industrial figures such as Seth Walchand Hirachand, widely regarded as the 'Father of Modern Transportation in India' for his groundbreaking contributions across shipping, aviation, and automobile manufacturing. An efficient transport network expands market accessibility, minimizes logistical costs for raw materials, optimizes equipment distribution, and unlocks underutilized regional resources for production. Geographically, Maharashtra occupies a critical socio-economic position as India's second-most-populous state and third-largest by area, spanning 307,731 km² (representing 9.84% of the nation's total geographic area). Bordered by the Arabian Sea to the west and contiguous with Gujarat, Dadra and Nagar Haveli, Madhya Pradesh, Chhattisgarh, Karnataka, Telangana, and Goa, the state functions as a vital domestic and international logistical corridor. Mumbai, the state capital, serves as India's financial hub. Consequently, maintaining a resilient multimodal transport network—comprising roads, railways, aviation, and maritime assets—is crucial to maintaining Maharashtra's role as a national growth driver.

2. Objective of the Study

This study aims to provide a comprehensive structural analysis of the transport system within Maharashtra. By assessing the individual modes of transport, evaluating their macroeconomic significance, analyzing revenue streams, and identifying persistent systemic challenges, this paper establishes an empirical framework to guide policy interventions, infrastructure investments, and sustainable logistics planning.

3. Research Methodology

This study utilizes an analytical framework built primarily on secondary data sources. Empirical evidence, statistical variables, and legislative frameworks were gathered from: The Economic Survey of Maharashtra (2024–25 and 2025–26); Statistical data from the Ministry of Road Transport and Highways (MoRTH) and the Ministry of Railways; Operational reports from the Jawaharlal Nehru Port Authority (JNPA) and Airports Authority of India (AAI); Peer-reviewed academic journals, governmental planning dockets, transport corporation financial bulletins, and economic reports.

4. Multimodal Transport Infrastructure in Maharashtra

4.1 Road Infrastructure and MSRTC

Road transport is the primary mode of public transit and commercial logistics in Maharashtra, providing essential last-mile connectivity to remote rural areas. The state possesses an expansive road network of over 3.37 lakh kilometers. The Maharashtra State Road Transport Corporation (MSRTC) manages the state's public road transport. Operating an active fleet of approximately 15,512 buses, MSRTC has recovered from pandemic-era disruptions to serve over 8.7 million daily passengers across an extensive inter-city and intra-district network. This fleet includes diverse service tiers ranging from basic rural stage carriages (Ordinary and Hirakani) to advanced eco-friendly electric segments (Shivai) and premium luxury lines (Shivneri).

4.2 Railway Network

Railways form the mass-transit backbone of Maharashtra's industrial and urban corridors, with a route length extending to 6,310.94 kilometers (accounting for roughly 9.1% of India's total rail network). The state hosts the headquarters of both the Central Railway (CR) and Western Railway (WR) zones in Mumbai. The Mumbai Suburban Railway system serves as an urban lifeline, accommodating over 7.5 million commuters daily across thousands of scheduled services. To alleviate strain on traditional suburban lines, the state has prioritized the rapid rollout of high-capacity Metro Rail transit networks via the Mumbai Metropolitan Region Development Authority (MMRDA), alongside operational lines in Pune and Nagpur, and planned networks in Nashik.

4.3 Aviation Sector

Maharashtra represents a crucial node in international and domestic aviation. The state features four major operational commercial aviation hubs. Chhatrapati Shivaji Maharaj International Airport (CSMIA) in Mumbai is India's second-busiest airport, recording a passenger throughput of 52.8 million passengers in recent fiscal cycles. To address capacity constraints at CSMIA, the greenfield Navi Mumbai International Airport is being developed as a twin-hub system. Concurrently, Pune International Airport has expanded its operations to handle over 10 million passengers annually, while international cargo and passenger services continue to scale at Dr. Babasaheb Ambedkar International Airport in Nagpur and Chhatrapati Sambhajanagar (Aurangabad) Airport.

4.4 Maritime Assets and Ports

Blessed with a 720-km coastline along the Arabian Sea, Maharashtra dominates India's sea-bound trade volumes. The state is anchored by two major national ports:

- Jawaharlal Nehru Port Authority (JNPA) (formerly JNPT) in Navi Mumbai: India's premier container gateway, which demonstrates exceptional throughput growth, handling over 4.66 million TEUs (Twenty-foot Equivalent Units) within single half-yearly fiscal blocks.
- Mumbai Port Trust (MbPT): Handles over 60 million tonnes of specialized bulk cargo, domestic cruise traffic, and liquid chemicals.
- Minor Ports: Supplemented by 48 non-major intermediate and minor ports (including Jaigad, Dighi, and Ratnagiri) managed by the Maharashtra Maritime Board (MMB) to support coastal shipping and regional industrial clusters.

5. Socio-Economic Significance of Transport

The transport matrix yields profound macroeconomic impacts across the state's internal markets:

- Industrial Acceleration: High-speed corridors (such as the Samruddhi Mahamarg and Mumbai-Pune Expressway) drastically lower transit times for finished industrial outputs and raw materials.
- Employment Integration: The sector acts as an engine for direct and indirect job creation, employing millions across transit operations, supply-chain management, maintenance engineering, and auxiliary roadside commerce.
- Mitigating Regional Disparities: Enhanced connectivity breaks down structural isolation, integrating historically underdeveloped zones like Marathwada and Vidarbha with prosperous industrial nodes.
- Tourism Maximization: Reliable multimodal connectivity simplifies access to World Heritage sites (Ajanta and Ellora), religious circuits, and coastal ecotourism zones, boosting international tourist spending.

6. Systemic Challenges and Structural Problems

Despite substantial infrastructural scaling, critical bottlenecks limit the optimal performance of Maharashtra's transport architecture:

- Severe Public Fleet Shortfalls: Empirical transit assessments indicate an urban-rural deficit, with Maharashtra requiring an estimated expansion of 24,000 public buses to meet optimal population-to-transit ratios.
- Urban Gridlock and Environmental Strain: Unregulated growth in private vehicle ownership has caused severe traffic congestion in Mumbai, Pune, and Thane, increasing emissions and lowering urban productivity.
- Safety and Capacity Strains in Rail Systems: The Mumbai Suburban network continues to operate well above its designed safety limits, causing dangerous overcrowding during peak hours.
- Structural Deficiencies and Climate Risks: Intermediate state highways and rural roads face significant structural degradation during extreme monsoon events, highlighting a need for climate-resilient engineering.
- MSRTC Fiscal Pressures: MSRTC faces persistent structural deficits caused by rising fuel costs, highly subsidized fare mandates, unoptimized routes, and legacy labor liabilities.
- Intermodal Fragmentation: The lack of single-ticket ticketing systems and unified logistical platforms creates friction for passengers and freight switching between road, rail, and port networks.

7. Macroeconomic Analysis: Sectoral Earnings Profile

table 7.1: macroeconomic analysis: sectoral earnings profile

Transport Sector	Primary Revenue Drivers	Estimated Annual Revenue (₹ in Crores)
Road Transport	MSRTC ticket sales, RTO registration taxes, e-challans, and highway toll plaza collections.	₹50,000 – ₹70,000
Rail Transport	Suburban ticket sales, long-distance passenger travel, and industrial freight corridors (coal, cement, commodities).	₹27,000 – ₹35,000
Maritime Transport	Port dues, container handling charges at JNPA, bulk cargo warehousing, and minor port tariffs.	₹6,500 – ₹11,000
Air Transport	Aeronautical landing fees, non-aeronautical retail, cargo logistics at CSMIA, Pune, and Nagpur.	₹5,000 – ₹6,500
Gross State Total	Combined Multimodal Operations	₹88,500 – ₹1,22,500 Crores

8. Conclusion and Policy Recommendations

Maharashtra's multimodal transport network is a critical foundation for its economic resilience and social development. While major infrastructure assets like JNPA and CSMIA position the state as a top-tier global logistics gateway, urban gridlock, public transit shortfalls, and the financial volatility of institutions like MSRTC present significant long-term risks.

To build a more resilient transport ecosystem, the state should prioritize several key policy interventions:

- **Accelerate Transit Integration:** Expand unified digital ticketing systems and establish multimodal logistics parks to simplify transfers between rail, road, and port networks.
- **Modernize the Fleet:** Transition MSRTC and urban municipal transport undertakings to asset-light, clean-energy electric bus models to improve financial sustainability and reduce environmental impact.
- **Build Climate-Resilient Infrastructure:** Implement stricter engineering standards and use climate-resilient materials for state highways and rural roads to minimize seasonal monsoon damage.
- **Promote Public Transit:** Implement targeted policy incentives to encourage public transit use, helping to ease traffic congestion in expanding Tier-1 and Tier-2 metropolitan areas.

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