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TRANSPORT SCHEMES 2026 PRELIMS

1. PM Gati Shakti National Master Plan:

PM Gati Shakti National Master Plan is a transformative **digital mega-platform** launched in October 2021. It functions as a **flagship umbrella initiative**, rather than a standalone central sector or centrally sponsored scheme, by integrating thousands of infrastructure schemes (like *Bharatmala*, *Sagarmala*, and *UDAN*) across central and state jurisdictions.

Core Governance & Ministry

- **Nodal Ministry:** Led by the **Ministry of Commerce and Industry**, specifically through the Logistics Division of the Department for Promotion of Industry and Internal Trade (DPIIT).
- **Implementing Agencies:** The primary implementation architecture consists of three tiers:
- **Empowered Group of Secretaries (EGoS):** The apex monitoring body headed by the Cabinet Secretary.
- **Network Planning Group (NPG):** Comprising heads of network planning divisions across participating ministries to ensure unified planning.
- **Technical Partner:** Developed and maintained digitally by **BISAG-N** (Bhaskaracharya National Institute for Space Applications and Geoinformatics).

Aims, Objectives, and Funding Mechanism

- **Primary Aims:** Break down deep-rooted bureaucratic silos by bringing 27 Central Government ministries and all 36 States/UTs onto a single GIS-based platform for synchronized infrastructure execution.
- **Key Objectives:**
  - **Reduce national logistics costs** from approximately 13–14% of GDP down to a global benchmark of 8–9%.
  - Achieve **last-mile connectivity** for 7 major economic engines: Roads, Railways, Airports, Ports, Mass Transport, Waterways, and Logistics Infrastructure.
  - Advance India towards a **$5 trillion economy** in the near term.
- **Funding Mechanism:** Built around a massive **₹100 lakh crore projected investment cycle**. Financial resources are pooled dynamically through the independent budgets of respective infrastructure ministries (e.g., Union Budget allocations). This is reinforced by the *Scheme for Special Assistance to States for Capital Investment*, which offers 50-year interest-free loans to boost State-level compliance.

Key Features

- **GIS Multi-Layer Mapping:** Integrates over 1,400 layers of data, mapping existing infrastructure, economic zones, forests, and land records into one platform.
- **Dynamic Tech Tools:** Features automated tools to calculate route optimization, estimate project proximity to ecologically sensitive zones, and process single-window No-Objection Certificates (NOCs).
- **Unified Digital Backbone:** Synchronizes cross-sectoral interventions, ensuring utility lines (like fiber optic cables or gas pipelines) are laid down concurrently during highway construction to prevent repetitive road-cutting.

Key Status Updates & Performance Achievements (As of 2026)

- **Project Evaluations:** The Network Planning Group (NPG) has rigorously mapped and evaluated over **352 mega infrastructure projects** valued at a combined **₹16.10 lakh crore**. Out of these, 201 projects have secured formal sanctions.
- **Railway Expansion Multipliers:** In the 2025-26 fiscal phase, Indian Railways escalated infrastructure investments under Gati Shakti to **₹1.53 lakh crore**, formalizing 100 strategic route expansion and track-doubling projects spanning over 6,000 kilometers.
- **Turnaround Time Reductions:** The Ministry of Petroleum and Natural Gas streamlined Detailed Route Surveys via the dynamic portal, reducing blueprinting turnarounds **from 6–9 months down to just 1 single day** via automated electronic DRS (*eDRS*).
- **Private Sector Integration:** Marking a critical operational shift, the Union Government officially **opened the PM GatiShakti portal data layers to the private sector** to dramatically de-risk commercial supply chains, optimize corporate logistics networks, and scale up outer-mile delivery models.
- **Social Sector Mapping:** Beyond transport, the master plan expanded into social infrastructure. The tool successfully tracked internet shadow zones for the Ministry of Health and mapped optimal, unserved geographic clusters for the construction of new regional schools and Anganwadi centers.

Criticisms and Operational Hurdles

- **Suboptimal Private Capital Inflow:** Despite robust state-led capital expenditure, matching investments from private industries remain sluggish due to low domestic credit off-take and ongoing cautious commercial demand.

- **Persistent Land Acquisition Logjams:** While digital mapping provides optimized route blueprints, the physical execution of projects still encounters severe local delays from complex land-titling laws, legal disputes, and local litigation.

- **Data Asymmetry and Standard Variance:** Operational friction persists because various participating ministries and state-level agencies log spatial assets using mismatched update frequencies and inconsistent data standard formats.
- **Local Level Capacity Deficits:** While central ministries utilize the software smoothly, municipal, district, and tier-II state agencies heavily lack the technical infrastructure and specialized GIS training required to leverage the system efficiently.

2. Bharatmala Pariyojana (Phase-II):

Bharatmala Pariyojana is a centrally funded umbrella scheme executed as a **flagship infrastructure initiative** under the administrative control of the **Ministry of Road Transport and Highways (MoRTH)**. The project is classified as a **Central Sector Scheme** because it is fully funded and managed by the Central Government rather than being a cost-sharing cost model with individual states.

Aims and Objectives

- **Optimise logistics efficiency**: Minimising transit time and supply chain costs by connecting economic hubs seamlessly.
- **Bridge infrastructure gaps**: Upgrading road corridors to replace localized package-based expansions with a corridor-wide macro approach.
- **Improve connectivity**: Linking over 550 district headquarters across India to minimum 4-lane national highways.
- **Enhance border and trade security**: Building dedicated routes along international borders and strategic coastal lines to boost external trade.

Implementing Agencies

The primary implementing agency is the **National Highways Authority of India (NHAI)**. It is supported jointly by the **National Highways and Infrastructure Development Corporation Limited (NHIDCL)** and individual **State Public Works Departments (PWDs)** for specialized border and regional connectivity stretches.

Funding Mechanism

- **Central Road and Infrastructure Fund (CRIF)**: Utilizing the dedicated cess collected on petrol and diesel vehicles.
- **Monetization of Assets**: Raising funds through the Toll-Operate-Transfer (TOT) model and National Highways Infra Trust (InfrAT) market offerings.
- **Market Borrowings**: Issuing external commercial bonds and institutional loans via NHAI.
- **Private Investment**: Encouraging private capital through public-private partnership (PPP) contracting models like the Hybrid Annuity Model (HAM) and Build-Operate-Transfer (BOT).

Core Features of Phase-II

- **PM Gati Shakti Integration**: Re-aligned entirely under the PM Gati Shakti National Master Plan Framework to harmonize highway routes with digital logistics, railways, and ports.
- **Logistics & Waterways Synergy**: Building network linkages for 24 Multi-Modal Logistics Parks (MMLPs) and integrating roads directly with 7 North-East inland waterway ports.
- **Greenfield Corridors**: Constructing 4 expressways and 19 access-controlled corridors spanning over 8,100 km.
- **Advanced Technology**: Adopting Automated & Intelligent Machine-Aided Construction (AI-MC), LIDAR, and drone-based analytics for real-time progress verification.

Update as of 2026

While Phase-I targets were extended through 2027–28 due to execution delays, MoRTH has officially initiated the Detailed Project Reports (DPRs) for Bharatmala Phase-II. The new phase transitions from generic lane expansions into a precise geospatial grid model connecting 860 distinct economic nodes—including special economic zones, defense corridors, and pharma hubs.

Achievements

- **Highway Development**: As of early 2025, out of the 26,425 km awarded, **19,826 km of national highways have been fully constructed**.
- **Greenfield Corridors**: Over 4,610 km of high-speed access-controlled greenfield corridors have been completed.
- **Safety Corrections**: Successfully conducted road safety audits across 82,389 km of highways, leading to the permanent rectification of 4,297 high-risk accident blackspots.
- **Transit Velocity**: Average freight movement speeds have increased by nearly 20% on completed express corridors.

Criticism

- **Cost Escalations**: The financial outlays have increased dramatically compared to the initial projections, driven by surging land acquisition costs and materials inflation.
- **Timeline Delays**: Phase-I missed its original 2022 completion target by multiple years due to slow pre-construction clearances and contractor financial strain.

- **Regulatory Hurdles**: Significant delays continue to emerge from strict environmental clearances and local land acquisition conflicts in ecologically sensitive border and tribal terrains

3. Sagarmala Project:

The **Sagarmala Programme** is the **flagship Central Sector Scheme** of the **Ministry of Ports, Shipping and Waterways (MoPSW)**, designed as an **umbrella initiative** to drive comprehensive port-led development across India's 7,500 km coastline.

Aims and Objectives

- **Reduce Logistics Costs:** Lower domestic and EXIM freight transportation costs by optimizing the modal mix.
- **Maximize Efficiency:** Lower bulk commodity logistics costs by locating future industrial capacities near the coast.
- **Enhance Competitiveness:** Improve international trade and discrete export manufacturing clusters near ports.
- **Harness Infrastructure:** Unlock the economic potential of 14,500 km of potentially navigable waterways.

Key Features and Pillars

The program is structurally divided into **five distinct pillars**:

- **Port Modernization:** Upgrading existing infrastructure and establishing new mega ports.
- **Port Connectivity:** Improving last-mile connectivity via new domestic road and rail networks.
- **Port-led Industrialization:** Developing Industrial Clusters, Coastal Economic Zones (CEZs), and manufacturing hubs near ports.
- **Coastal Community Development:** Funding fishing harbours, skill-building academies, and local infrastructure.
- **Coastal Shipping & Inland Water Transport:** Shifting heavy freight traffic from roadways to waterways.

Scheme Classification

- **Scheme Type:** It is a **Central Sector Scheme**, meaning it is fundamentally conceptualized and funded directly by the Central Government.
- **Nature:** It acts as an **umbrella program/flagship scheme** that aligns, co-funds, and converges individual maritime projects executed across various states.

Funding Mechanism

- **Cost-Sharing Cap:** The fund contribution from the MoPSW budget is strictly capped at **50% of the project cost**. This is provided as a grant-in-aid released in three milestone-linked tranches.
- **100% Funding Exception:** The Ministry may provide **100% financial assistance** for highly strategic, unique, or financially unviable projects based on merit.
- **Multi-Model Influx:** Balance project funding is mobilized via public-private partnerships (PPP), internal resources of port trusts, state equity, and debt investments.

Implementing Agencies

The project utilizes a multi-tiered execution structure:

- **Apex Oversight:** The National Sagarmala Apex Committee (NSAC) handles policy guidance, alongside the Maritime States Development Council (MSDC) for Centre-State coordination.
- **Core Financial Intermediary: Sagarmala Finance Corporation Limited (SMFCL)**—previously known as Sagarmala Development Company Limited (SDCL)—acts as India's first dedicated maritime sector Non-Banking Financial Company (NBFC) to provide equity support and fund residual projects.
- **On-Ground Execution:** Central Line Ministries, State Governments, State Maritime Boards, and Special Purpose Vehicles (SPVs) like the Indian Port Rail & Ropeway Corporation Limited

4. UDAN (Ude Desh ka Aam Nagrik):

The **UDAN (Ude Desh ka Aam Nagrik)** scheme, launched on **21 October 2016** under the National Civil Aviation Policy (NCAP) 2016, is India's **flagship Central Sector Scheme** designed to **democratise civil aviation** by making air travel affordable and expanding regional connectivity to Tier-2 and Tier-3 cities.

Scheme Classification & Governance

- **Ministry:** Ministry of Civil Aviation (MoCA).
- **Implementing Agency:** Airports Authority of India (AAI) serves as the nodal implementing agency.
- **Scheme Nature:** It is a **Central Sector Scheme** (funded directly by the Central Government, though State Governments provide specific concessions and supplementary funding).
- **Umbrella vs. Flagship:** It operates as a standalone **flagship scheme** for regional connectivity. However, it features specialised sub-components like *Krishi Udaan* (for agricultural cargo transport) and *International UDAN*.

Aims and Objectives

- **Affordable Travel:** Making air travel accessible to the common citizen with capped airfares.
- **Regional Growth:** Connecting unserved (no existing flights) and underserved (one or fewer flights a day) airports.
- **Infrastructure Revival:** Developing existing airstrips and building new Greenfield/Brownfield regional airports.
- **Economic Spillover:** Boosting local commerce, tourism, and emergency medical access in remote terrains.

Funding Mechanism

The economic engine of UDAN relies on a market-driven, subsidized framework:

- **Regional Connectivity Fund (RCF):** A dedicated fund built by levying a small fee on commercial flights operating on major trunk routes (e.g., metro-to-metro flights).
- **Viability Gap Funding (VGF):** Financial support disbursed directly to selected airlines to cover operational losses incurred due to capped passenger fares.
- **Cost Sharing:** The Central Government funds **80% of the VGF** (up to 90% for North-Eastern states and Union Territories), while respective State Governments contribute the remaining **20% (or 10%)**.

Key Features

- **Airfare Cap:** Fares are strictly capped (e.g., approximately **₹2,500 for a 1-hour flight** or a 500 km distance on fixed-wing aircraft).
- **Seat Allocation:** Airlines must reserve a minimum of 9 and a maximum of 40 seats per flight under the subsidized RCS fare cap.
- **Concessions for Operators:** Levies are reduced via waived airport landing/parking fees, lower terminal navigation charges, and a reduced Value Added Tax (VAT) on Aviation Turbine Fuel (ATF) by participating states.
- **Competitive Bidding:** Routes are awarded through transparent reverse-bidding where airlines requiring the lowest VGF subsidy win exclusive operating rights for 3 years.
- **Multi-Modal Fleets:** Broadened beyond traditional airplanes to integrate helicopters, small fixed-wing aircraft, and seaplanes for island or mountainous geographies.

Status and Achievements (As of 2026)

In March 2026, the Union Cabinet officially approved the **Regional Connectivity Scheme – Modified UDAN** for a ten-year extension (**FY 2026-27 to FY 2035-36**) with a massive financial outlay of **₹28,840 crore**.

Key milestones achieved include:

- **Route Operationalisation:** 663 routes have been successfully operationalised across India.
- **Network Scale:** Active air infrastructure expanded to **95 operational gateways**, including heliports and water aerodromes.
- **Passenger Volume:** Over **1.62 crore (16.2 million) passengers** have flown via 3.41 lakh individual UDAN flights.
- **Target 2026 & Beyond:** Under the newly minted framework, the government aims to construct **100 new airports/helipads** and add **120 new destinations** to transition 4 crore additional passengers over the decade.

Criticisms and Core Issues

Despite transforming the aviation landscape, the scheme has faced scrutiny from the Comptroller and Auditor General (CAG) and industry analysts:

- **Low Route Sustainability:** A substantial portion of awarded routes ceased operations after the mandatory 3-year VGF subsidy period expired because local passenger demand was commercially unviable.
- **Infrastructure Bottlenecks:** Many newly revived regional airstrips lack critical operational infrastructure, such as Instrument Landing Systems (ILS) or night-landing facilities, resulting in frequent weather-related flight cancellations.
- **Financial Strain on Small Airlines:** Delays in VGF disbursement coupled with low asset utilization forced several smaller regional carriers into insolvency or forced route suspensions.
- **Monopoly & Low Inter-Modal Edge:** Major airlines often prioritize high-yield metro routes over Tier-3 towns. Furthermore, rapid expansions in high-speed rail networks and highways frequently offer cheaper, more reliable alternatives, reducing the edge of short-haul regional flights

5. **Cashless Treatment Scheme for Road Accident Victims (2025**

The **Cashless Treatment for Road Accident Victims Scheme, 2025**—officially launched nationwide by the Prime Minister on **13 February 2026** as the **PM-RAHAT (Road Accident Victims' Hospitalisation and Assured Treatment) Scheme**—provides up to **₹1.5 lakh of free, cashless medical treatment for up to 7 days** to any motor vehicle accident victim.

Aims and Objectives

- **Golden Hour Care:** To provide immediate, professional medical intervention during the critical first hour post-trauma when treatment is most effective to preserve life.
- **Reduce Fatalities:** To curb preventable road accident deaths and alleviate immediate financial shock for affected families.
- **Equitable Trauma Access:** To grant statutory, paperless, and uninterrupted access to trauma and polytrauma care.

Classification & Administrative Framework

- **Nodal Ministry:** It is an initiative of the Ministry of Road Transport and Highways (MoRTH).
- **Implementing Agencies:** Coordinated at the central level by an **Inter-Ministerial Steering Committee**. The **National Health Authority (NHA)** serves as the primary IT execution partner. State Health Agencies (SHAs), local police forces, and District Road Safety Committees (DRSCs) implement it on the ground.
- **Scheme Type:** It is a statutory **Central Sector Scheme**. It is backed by Section 162 of the Motor Vehicles Act, 1988.
- **Umbrella vs. Flagship Status:** It functions as a **statutory standalone scheme**. It is separate from the Ayushman Bharat PM-JAY umbrella, though it operates on the same administrative IT infrastructure.

Funding Mechanism

Reimbursements to hospitals are drawn from the **Motor Vehicle Accident Fund (MVAF)**, which operates on a hybrid financing structure:

- **Insured Vehicles:** Funded through financial contributions made by general insurance companies.
- **Uninsured and Hit-and-Run Cases:** Funded directly through **Central Government budgetary support**. The Union government allocated a dedicated budget of **₹272 Crore** for non-insured cases during the 2025–26 financial period.

Key Features

- **Universal Coverage:** Open to all road accident victims on any road category, completely **irrespective of nationality**.
- **Financial Cap:** Provides cashless clinical treatment up to **₹1,50,000 per person per accident**.

- **Time Limitation:** Hospitalization and treatment costs are covered for **7 days** from the accident date. First hospitalization must happen within 24 hours of the incident to qualify.
- **Stabilization Mandate:** Guarantees initial stabilization up to 24 hours in non-life-threatening cases and up to 48 hours in critical situations.
- **Statutory Precedence:** This law **takes precedence** over all other conflicting Central or State health welfare schemes.
- **112 Integration:** Integrated directly with the **112 Emergency Response Support System (ERSS)** to rapidly direct Good Samaritans (*Rah-Veers*) or victims to the closest hospital.

Status Update (As of 2026) & Achievements

- **Full Rollout:** Following its notification on 5 May 2025 and pilot tests in Chandigarh and Assam, the scheme was rebranded and rolled out on a **pan-India scale** in February 2026.
- **Platform Amalgamation:** The technology framework successfully unified MoRTH's **eDAR (Electronic Detailed Accident Report)** system used by the police with the NHA's **TMS 2.0 (Transaction Management System)** used by hospitals. This creates an end-to-end digital trail from emergency admission to payment.
- **Massive Hospital Onboarding:** As of March 2026, **36,112 hospitals** empanelled under Ayushman Bharat PM-JAY have been automatically designated to accept victims under PM-RAHAT.
- **Speedy Claims:** Established a strict **10-day payment timeline** for District Collectors or the General Insurance Council to clear hospital bills once claims are cleared by State Health Agencies

6. Coastal Cargo Promotion Scheme:

The **Coastal Cargo Promotion Scheme** (also expanded and linked with the **Jalvahak Scheme**) is a dedicated initiative launched by the Government of India to incentivize the shift of freight from congested roads and railways to water-based transport.

Ministry and Implementing Agency

- **Ministry:** Ministry of Ports, Shipping, and Waterways (MoPSW).
- **Implementing Agencies:** The primary execution is handled by **Inland and Coastal Shipping Limited (ICSL)** (a subsidiary of the Shipping Corporation of India) alongside the **Inland Waterways Authority of India (IWAI)**. A joint evaluation committee comprising MoPSW, IWAI, and SCI/ICSL monitors its deployment.

Scheme Classification & Nature

- **Central Sector vs. Centrally Sponsored:** It is a **Central Sector Scheme**. 100% of the core incentive funding is provided directly by the Central Government.
- **Flagship or Umbrella:** It functions as a specialized, targeted scheme under the broader **Sagarmala Programme** (India's mega maritime umbrella framework). It aligns with the long-term **Maritime Amrit Kaal Vision 2047**.

Aims and Objectives

- **Modal Shift:** Incentivize cargo owners to transition their long-haul freight from road and rail networks to sustainable maritime routes.
- **Decongestion:** Minimize pressure, traffic bottlenecks, and wear-and-tear on national highway systems and heavy rail corridors.
- **Logistics Cost Reduction:** Lower India's overall logistics expenses to boost domestic industrial competitiveness and EXIM trade.
- **Targeting 2047 Targets:** Successfully scale up the total freight share of inland waterways and coastal shipping from **6% to 12% by the year 2047**.

Funding Mechanism

- **Budgetary Support:** Financed through the Gross Budgetary Support (GBS) of the Central Government, with an initial foundational outlay of **₹95.42 crore** mapped across a 3-year block.
- **Component Split:**
  - *Component 1 (Direct Incentives):* ~₹41.45 Crores allocated directly to cargo owners.
  - *Component 2 (Scheduled Operations):* ~₹37.41 Crores disbursed to ICSL to operate dedicated commercial vessel lines.
  - *Management & Contingencies:* Remaining funds (~₹16.56 Crores) cover administrative processing and operational contingencies.
- **Infrastructure Matching:** Separately, for associated physical port upgrades or coastal berths under the broader Sagarmala umbrella, financial assistance up to 50% is provided, with the balance met by the respective State Government or port authorities.

Key Features

- **Financial Reimbursement:** Cargo owners receive up to **35% reimbursement of actual operational expenditures** for shifting bulk loads to waterways.

- **Distance & Commodity Focus:** Applicable to long-haul movements **exceeding 300 km**. It primarily targets bulk commodities like coal, iron ore, cement, steel, fertilizers, and food grains.
- **Route Specificity:** Focuses heavily on major National Waterways (NW-1 Ganga, NW-2 Brahmaputra, NW-16 Barak) and the Indo-Bangladesh Protocol (IBP) route.
- **Scheduled Sailings:** Establishes predictable freight networks across specific routes, such as the *Kolkata–Patna–Varanasi–Pandu (Assam)* corridor.
- **Exclusions:** Short-haul transits (less than 200–300 km), Ro-Ro (Roll-on/Roll-off), Ro-Pax, and Over Dimensional Cargo (ODC) operations are excluded from direct cash incentives.
- **Fiscal Incentives:** Includes a **40% discount** on vessel/cargo charges at major ports, priority berthing, Green Channel clearances, and a reduction of GST on bunker fuel from 18% to 5% for Indian-flagged vessels.

2026 Status and Achievements

- **Expanded Scope (Budget 2026–27):** The program received a major administrative expansion and funding boost during the **Union Budget 2026–27** to accelerate green logistics.
- **Turnaround Times:** Helped slash the average turnaround time of cargo vessels at major Indian ports down to **49.47 hours** (and container turnaround to 30.08 hours).
- **Volume Targets:** On-track to divert an estimated **800 million tonne-km** of freight to waterways, shifting nearly 17% of baseline target cargo off roads.
- **Macro Maritime Growth:** Supported India's major ports in handling a record **915.17 million tonnes of cargo** in the immediate past fiscal cycle.
- **Network Progress:** Operationalized critical infrastructure corridors, including the integration of National Waterway-5 in Odisha to link mineral-rich zones (Talcher/Angul) with critical deep-water hubs like Paradip and Dhamra.

Criticisms and Core Bottlenecks

- **Seasonal Water Fluctuations:** Critics point out that natural issues like massive dry-season water depth drops and chronic siltation restrict operational capacity to **only 25–30%** on key inland routes, making year-round schedule guarantees hard to fulfill.
- **High Port Transaction Costs:** Private maritime operators highlight that high local port tariffs and regulatory overheads run by local port bodies offset the financial advantages gained from the 35% subsidy.

- **The "Cargo Guarantee" Catch:** Shipping lines are hesitant to commit dedicated ships exclusively to coastal routes without a strict minimal cargo volume guarantee from public or private enterprises, slowing down early adoption.
- **First/Last-Mile Deficit:** Inefficiencies and lack of dedicated railway sidings or highway linkages at river terminals mean that getting the cargo *to* and *from* the water berth adds hidden logistics costs

7. Seaplane VGF (Viability Gap Funding) Scheme:

The **Seaplane Viability Gap Funding (VGF) Scheme** is a targeted sub-component of India's newly revamped, 10-year **Modified UDAN (Ude Desh ka Aam Nagrik)** regional connectivity initiative, officially announced in the **Union Budget 2026–27**.

Ministry and Implementing Agency

- **Ministry:** Ministry of Civil Aviation (MoCA), Government of India.
- **Implementing Agency: Airports Authority of India (AAI)**, which acts as the designated nodal agency for managing the Regional Connectivity Fund and supervising the development of allied infrastructure like water aerodromes.

Scheme Categorisation

- **Type of Scheme:** It is a **Central Sector Scheme**. The central government drives the funding mechanism, while state governments collaborate via local concessions and land allocations for water aerodromes.
- **Flagship vs. Umbrella:** It functions as a **specialised component under an Umbrella/Flagship framework**. Specifically, it falls under the overarching regional connectivity umbrella of the **Modified UDAN Scheme**.

Aims and Objectives

- **Enhance Remote Connectivity:** Provide last-mile air connectivity to geographically isolated regions, coastal borders, and scenic inland waterways.
- **Boost Tourism:** Unlock access to unexplored eco-tourism hubs, pilgrim sites, and prominent island territories like Andaman & Nicobar and Lakshadweep.
- **Indigenise Manufacturing:** Offer parallel industrial incentives to kickstart the domestic manufacturing and assembly of amphibious aircraft and seaplanes within India.

- **Mitigate Operator Risk:** Bridge the initial financial shortfall for operators until commuter demand stabilizes on newly created water-based routes.

Funding Mechanism & Features

- **Operational Subsidies:** Financial aid is disbursed directly from the Regional Connectivity Fund (RCF) to subsidise a fixed percentage of seats, offsetting the higher operational costs inherent to amphibious aircraft.
- **Competitive Bidding:** Routes are allocated to selected airline operators via transparent, competitive reverse-bidding rounds.
- **Allied Infrastructure Concessions:** Operators receive waivers on landing and parking fees alongside heavily subsidized Aviation Turbine Fuel (ATF) at designated water aerodromes.
- **Dual-Use Capable:** The infrastructure is strategically structured to support versatile secondary applications, including coastal defense, environmental research, and emergency medical evacuations.

Current Status & Achievements (As of 2026)

- **Formulation & New Directives:** The customized standalone Seaplane VGF framework is currently moving through its final administrative formulation stages as part of the **Modified UDAN roll-out (2026–2036)**.
- **Infrastructure Footprint:** Under the prior testing phases of UDAN, **2 water aerodromes** have been successfully operationalized, and bidding invitations have expanded to over **50 identified water bodies** across India.
- **Private Sector Mobilization:** Fleet acquisition is gaining momentum. Private operators like SkyHop Aviation have advanced plans to launch a 19-seater Twin Otter seaplane service connecting Kochi to five distinct islands in Lakshadweep (Agatti, Kavaratti, Kalpeni, Kiltan, and Kadmat). Parallelly, *IndiaOne Air* signed intents to induct up to 10 amphibious aircraft.

Criticisms and Challenges

- **Historic Commercial Unviability:** Critics point out a history of failures. Earlier signature flights—such as the highly publicized 2020 Sabarmati Riverfront to Statue of Unity route—were quickly suspended due to prohibitive operational overheads and low steady demand.
- **The "Subsidy Cliff":** A broader Comptroller and Auditor General (CAG) of India report revealed that **only 7% to 10% of total UDAN routes** remain financially self-sustaining once government financial assistance terms expire. Over 320 regional routes fell into complete disuse by early 2026.

- **Lack of Domestic Maintenance Ecosystem:** India lacks local Maintenance, Repair, and Overhaul (MRO) facilities tailored to seaplanes, requiring expensive foreign component sourcing and corrosive saltwater engineering support.
- **Strict Environmental Hurdles:** Developing water aerodromes faces severe delays due to stringent environmental clearances required to protect fragile coastal and riverine ecosystems

8. High-Speed Rail Corridor Programme:

The **High-Speed Rail Corridor Programme** in India is an infrastructure initiative designed to construct a network of bullet trains operating at speeds of **250 to 350 km/h** across newly-built, standard-gauge corridors. The programme is governed under the **Ministry of Railways**. It is implemented through the National High Speed Rail Corporation Limited (NHSRCL), which functions as a Special Purpose Vehicle (SPV) jointly backed by the Central Government and participating state governments.

Financially, it operates as a **Central Sector Scheme** under a flagship, standalone umbrella infrastructure push, though its specific execution models utilize joint equity distribution between the Centre (50%) and beneficiary states like Gujarat (25%) and Maharashtra (25%).

Aims and Objectives

- **Drastic Travel Time Reduction:** Lowering the commute time between major commercial hubs (e.g., reducing the Mumbai–Ahmedabad transit from over 6 hours to **2.07 hours**).
- **Economic Linkage:** Connecting financial centers, technology hubs, and manufacturing clusters to stimulate regional GDP and industrial growth.
- **Next-Gen Passenger Travel:** Providing a safer, highly reliable, and highly punctual alternative to domestic aviation and heavily congested traditional rail lines.
- **Environmental Sustainability:** Decongesting highways and reducing carbon emissions by transitioning passengers to an eco-friendly electric transport system.
- **Make in India & Technology Transfer:** Adopting advanced foreign rail systems to build long-term indigenous capacity for high-speed rail engineering.

Funding Mechanism

The funding relies on a mix of highly concessional foreign debt and domestic equity contribution:

- **External Loan:** The **Japan International Cooperation Agency (JICA)** provides **81% of the total project funding** through an Official Development Assistance (ODA) soft loan. This loan features a highly favorable interest rate of **0.1%**, a repayment timeline spanning 50 years, and a 15-year initial moratorium.
- **Equity Sharing:** The remaining cost is split via equity investments in the NHSRCL SPV, where the Ministry of Railways holds a **50% stake**, and the respective state governments of Maharashtra and Gujarat hold **25% each**.

Key Features

- **Advanced Technology Trunk:** Utilizes Japan's legendary **Shinkansen E5 Series** trainsets, known for a zero-accident legacy since 1964.
- **Ballastless Track Systems:** Implements the Shinkansen-based **J-slab ballastless track system** mounted onto reinforced concrete (RC) beds to sustain high dynamic stresses.
- **Heavy Engineering Landmarks:** Encompasses vast stretches of elevated viaducts, dozens of river bridges, and India's first **underground/undersea station** at Bandra-Kurla Complex (BKC).
- **Automatic Safety Protocols:** Incorporates continuous in-cab signaling and automated train protection protocols to remove vulnerabilities found in traditional trackside signals.

2026 Programme Updates & Expansion

During the Union Budget presentation, the government officially expanded the scope of the programme beyond its initial pilot phase by approving **seven new high-speed rail corridors** to act as regional development linkages:

PIB +2

1. Mumbai – Pune
2. Pune – Hyderabad
3. Hyderabad – Bengaluru
4. Hyderabad – Chennai
5. Chennai – Bengaluru
6. Delhi – Varanasi
7. Varanasi – Siliguri

The Railway Board has immediately fast-tracked pre-construction workflows, mandate formatting, and contract documentations for these routes.

Achievements

The pioneering **Mumbai–Ahmedabad High-Speed Rail (MAHSR)** corridor has achieved several infrastructure benchmarks:

- **Civil Infrastructure:** Completed **over 349 km of mainline viaducts** and **443 km of structural pier work**.
- **Bridges Built:** Successfully constructed **17 major river bridges**, 13 heavy steel bridges, and 5 pre-stressed concrete (PSC) bridges.
- **Track Layout & Power:** Finished **374 track km (187 route km)** of RC track bed construction alongside the installation of more than 7,700 overhead equipment (OHE) masts.
- **Tunnelling Progress:** Excavated 5 km of the complex 21 km New Austrian Tunnelling Method (NATM) stretch running between BKC and Shilphata.
- **Station Progress:** Finished foundational construction for 8 out of the 12 designated stations, with advanced superstructure assembly well under way across all stations inside Gujarat.

Criticisms and Challenges

- **Exorbitant Capital Expenditure (CAPEX):** Critics flag the massive base budget (exceeding **₹1.08 lakh crore** for just the first line), arguing these funds would yield better public returns if reinvested to overhaul India's aging conventional safety and track frameworks.
- **High Operational Viability Thresholds:** Studies from institutions like IIM Ahmedabad indicate the system requires at least 100,000 daily passengers paying premium tickets to break even, putting it in direct competition with low-cost domestic flights.
- **Severe Land Acquisition Delays:** Densely populated areas and complex legal resettlement guidelines caused severe initial friction, forcing the project's ultimate completion target to shift from its early timelines to an incremental launch starting late this decade.
- **Supply Chain and Component Bottlenecks:** Delays in importing critical custom heavy machinery—such as heavy Tunnel Boring Machines (TBMs)—have occasionally throttled underground excavation speeds.

- **Affordability vs. Inclusivity:** Observers point out that high-speed rail caters heavily to a premium passenger tier, potentially widening the gap in a public transit system where safe sleeper and general coaches remain in severe shortage

9. PM eBus Seva:

The **PM-eBus Sewa** scheme is an active government initiative to deploy **10,000 electric buses** across Indian cities on a Public-Private Partnership (PPP) model.

Aims and Objectives

- **Augment Public Transport:** Enhance formal city bus services, targeting urban areas lacking organized public transport.
- **Reduce Carbon Footprint:** Curtail greenhouse gas (GHG) emissions and fossil fuel consumption by shifting to zero-emission fleets.
- **Drive E-Mobility Transition:** Enable smaller cities to transit seamlessly to electric vehicles by setting up standardized infrastructure.
- **Boost Domestic Supply Chains:** Create standard economies of scale to foster localized vehicle component manufacturing.

Classification and Nodal Ministry

- **Ministry:** Implemented under the [Ministry of Housing and Urban Affairs (MoHUA)](1.1.3, 1.1.5).
- **Scheme Type:** It is classified as a **Centrally Sponsored Scheme**.
- **Nature:** It serves as a dedicated, standalone **flagship scheme** for urban public transit electrification, working in close tandem with the Ministry of Heavy Industries' broader **PM E-DRIVE** scheme.

Implementing Agency & Funding Mechanism

- **Implementing Agencies:** State and city-level Public Transport Authorities (PTAs) manage operations locally, while **Convergence Energy Services Limited (CESL)** aggregates e-bus demand and handles national-level project execution.
- **Total Estimated Budget:** ₹57,613 crore, with the Central Government providing **₹20,000 crore** in Central Assistance (CA).
- **Gross Cost Contract (GCC) Model:** OEMs/private operators procure and operate the e-buses; PTAs pay them on a monthly, per-kilometre basis.

- **Central Subsidy Structure:** Operation support is locked for 10 years (or up to March 2037) based on bus sizing: **₹24/km** for standard (12m), **₹22/km** for midi (9m), and **₹20/km** for mini (7m) buses.
- **Infrastructure Support:** The central government funds **100% of Behind-The-Meter (BTM) power infrastructure**. Civil depot infrastructure gets tiered central assistance: **60%** for regular state cities, **90%** for hilly/North-East state capitals, and **100%** for Union Territories without a legislature.
- **Payment Security Mechanism (PSM):** Backed by a dedicated ₹3,435.33 crore pool managed by CESL. If a PTA defaults on operational fees, the PSM fund covers the operators immediately. The defaulting state/PTA must repay the fund within 90 days, or the Ministry invokes a **Direct Debit Mandate (DDM)** via the Reserve Bank of India (RBI).

Key Features

- **Target Cities:** Focuses on cities with populations between 3 to 40 lakh, including state capitals, hilly regions, and small clusters of adjoining statutory towns.
- **Green Urban Mobility Initiatives (GUMI):** Integrates auxiliary infrastructure such as multimodal interchange stations, smart bus stops, and Intelligent Transit Management Systems (ITMS).
- **Unified Digital Ticketing:** Mandates the implementation of National Common Mobility Card (NCMC) systems for automated fare collections.
- **Accessibility Mandate:** Includes specific provisions for the elderly and disabled, requiring features like low floors, visual/audio passenger information systems, and a **25% reservation for buses equipped with hydraulic lifts or ramps**.

Progress and Achievements (As of 2026)

- **Widespread Sanctions:** Out of the 10,000 e-buses target, **7,293 buses have been sanctioned** across 116 cities spanning 26 to 27 States and UTs.
- **Bidding Milestones:** Tenders for **6,228 buses** have been concluded, and Letters of Award (LoA) have been signed by PTAs for **4,720 buses**.
- **Infrastructure Rollout:** Roughly **₹1,254.38 crore has been sanctioned** for infrastructure development, with **₹483.70 crore already spent** on Civil Depots and BTM power networks across the selected cities.
- **Financial Shield Activation:** 19 States and UTs have successfully registered their Direct Debit Mandates with the RBI to unlock the payment safety feature.

Challenges and Criticisms

- **Slow Rollout and Delayed Tenders:** Despite aggressive initial bidding processes, final operational deployments on city roads have lagged due to bureaucratic bottlenecks and processing delays within the aggregating entities.
- **Supply Chain Crises:** EV manufacturers are encountering acute battery cell and chassis component shortages, heavily linked to restrictions or dependency on import components from China.
- **Financial Health of PTAs:** Many state-run transit authorities operate at a heavy loss, triggering long-term commercial anxiety among private manufacturers over whether the PSM fund can completely absorb structural defaults.
- **Accessibility Violations:** Activists point out that initial tenders issued by some municipal authorities neglected physical accessibility benchmarks, failing to deploy low-floor configurations uniformly across tiers.
- **Drop in the Ocean Context:** Critics argue that 10,000 buses are statistically insignificant given India's demand for over 600,000 replacement buses by 2030, meaning the environmental impact on air quality remains highly localized

10. AMRUT 2.0 (Transport Component):

The **Atal Mission for Rejuvenation and Urban Transformation 2.0 (AMRUT 2.0)** is a **flagship scheme** operating as a **Centrally Sponsored Scheme (CSS)**. It functions under the **Ministry of Housing and Urban Affairs (MoHUA)**.

At the local execution level, the **implementing agencies** are the respective **Urban Local Bodies (ULBs)**, State-level parastatal agencies (such as State Jal Nigams or Urban Water Supply Boards), and designated state implementing authorities.

Transport Component of AMRUT 2.0

While AMRUT 2.0 prioritizes making cities "water secure," it retains **Urban Transport / Green Mobility** from its predecessor as a key physical infrastructure sector.

- **Aims & Objectives**: The component aims to reduce urban pollution, enhance city aesthetics, and improve overall public health. Its core objective is to facilitate a shift from private vehicular transport to public and environment-friendly transport systems.
- **Key Features**: Focuses primarily on **Non-Motorized Transport (NMT)** infrastructure. This includes building and upgrading dedicated footpaths, sidewalks, pedestrian pathways, cycle tracks, and public bicycle sharing

systems. It also mandates the inclusion of smart features and child/elderly-friendly designs into urban mobility infrastructure.

Funding Mechanism

AMRUT 2.0 utilizes an **outcome-based funding** architecture where central assistance is tied directly to the achievement of pre-declared service level benchmarks.

- **Total Outlay:** The overall indicative national budget for the mission is **₹2,99,000 crore**, which includes a Central share of **₹76,760 crore** spanning from FY 2021-22 to FY 2025-26.
- **Fund-Sharing Pattern:** Central assistance is released to States/UTs in three distinct tranches based on the approval of their State Water/Urban Action Plans. The local project cost is split dynamically among the Centre, State Governments, and ULBs:
  - **Union Territories:** Funded 100% by the Central Government.
  - **North-Eastern and Himalayan States:** Funded 90% by the Central Government and 10% by State/Local bodies.
  - **Other Cities (by population):** For cities with a population under 1 lakh, the Centre provides 50% funding; for cities between 1 lakh and 10 lakh, the Centre provides one-third (33.3%) funding; for million-plus cities, the Centre provides 25% funding.
- **Public-Private Partnership (PPP) Mandate:** To leverage commercial finance, million-plus cities must mandatorily allocate at least **10% of their total project funds** toward PPP models.

Progress Updates & Achievements (As of 2026)

A Parliamentary panel review and official ministry reports highlights critical milestone completions under the scheme:

- **Green Mobility Assets:** Across the cumulative span of the AMRUT missions, **323 Green Mobility projects** have been successfully executed across India to lower transport emissions.
- **Water Treatment Pipeline Infrastructure:** Over **90,457 km of urban water pipelines** have been laid or replaced. Over **5,417 MLD of water treatment capacity** has been added on the ground.
- **Recreation Areas:** Urban local bodies completed **2,429 park projects**, effectively adding more than **5,044 acres of functional green spaces** to targeted statutory towns.
- **Municipal Financial Reforms:** To make local bodies self-reliant, **468 cities completed credit rating assessments**, with 162 towns achieving an Investible Grade Rating (IGR). Additionally, 12 major ULBs raised a collective **₹4,684 crore through Municipal Bonds**.

Criticisms and Key Challenges

Despite expanding base infrastructure, several operational limits and execution gaps have been flagged by a Parliamentary Committee and technical review studies:

Criticism Area	Core Issues Identified
Severe Implementation Delays	The Parliamentary Panel noted a massive lag in execution; out of the newly approved 11,393 MLD water treatment capacity under AMRUT 2.0, an underwhelming **0.4% (only 6 MLD)** was fully completed by the end of the initial timeline.
Fragmented Project Planning	Infrastructure works have frequently been executed in complete isolation. They lack alignment with municipal master plans, urban drainage blueprints, and regional environmental strategies.
Weak Inter-Agency Coordination	Urban governance remains highly fractured. There is poor institutional connection between separate agencies handling project planning, asset financing, execution, and daily operations.
High Distribution Losses	Expanded piped networks continue to face structural failures. Non-Revenue Water (NRW) losses due to leakages and unmetered flow remain critically high, ranging from **30% to 70%** across various ULBs.
Local Capacity & Data Deficits	Most small and mid-tier municipalities face severe shortages of skilled environmental planners, water engineers, and GIS/SCADA operators. This severely degrades real-time data monitoring and digital tracking capabilities.

11. Raajmarg InvIT:

Raajmarg Infra Investment Trust (RIIT) is **not a central sector or centrally sponsored scheme**, nor is it classified as a standalone flagship or umbrella scheme. It is a **market-led corporate investment**

vehicle created to manage the public issuance of the National Highways Authority of India's (NHAI) asset monetisation program under the broader **National Monetisation Pipeline (NMP)**.

Ministry and Implementing Agency

- **Ministry:** It operates under the Ministry of Road Transport and Highways (MoRTH), Government of India.
- **Implementing Agency / Sponsor:** National Highways Authority of India (NHAI) acts as the primary sponsor.
- **Investment Manager:** The day-to-day operations are handled by the newly incorporated **Raajmarg Infra Investment Managers Private Limited (RIIMPL)**.
- **Trustee:** IDBI Trusteeship Services Limited oversees regulatory and legal compliance for investors.

Aims and Objectives

- **Capital Recycling:** Monetise completed, revenue-generating operational national highways to raise non-budgetary resources for constructing new road corridors.
- **Democratising Infrastructure Wealth:** Allow domestic retail and ordinary citizens to invest directly in national highways, turning highway users into road stakeholders/owners.
- **Reducing Public Debt:** Generate capital streams independently to ease NHAI's historical reliance on traditional commercial debt and budgetary allocations.

Funding Mechanism

- **Asset Pooling:** NHAI transfers concession rights of revenue-yielding toll roads to the trust.
- **Public Sourcing (IPO):** Capital is raised via public unit offerings, combining equity and debt instruments.
- **Return on Investment:** Toll fees collected from these assigned highways are pooled into the trust and redistributed back to unit holders as consistent dividend and interest payouts.

Key Features

- **SEBI Regulated:** Fully registered and compliant with the **Securities and Exchange Board of India (SEBI)** Infrastructure Investment Trusts Regulations.
- **Retail Focus:** Unlike prior institutional InvIT rounds, Raajmarg InvIT scales down ticket sizes to actively target domestic retail and small-scale investors.
- **Public Exchange Listing:** Units are traded on the **Bombay Stock Exchange (BSE)** to ensure fluid liquidity.

Status and Achievements (As of 2026)

- **Stock Market Debut:** The Raajmarg InvIT initial public offering (IPO) was officially listed on the BSE on **24th March 2026**.
- **Massive Retail Demand:** The public issue witnessed significant investor confidence, ending with a subscription rate **overwhelmingly oversubscribed nearly 14 times**.
- **Monetisation Milestone:** Powered by the successful close of Raajmarg InvIT and auxiliary Toll-Operate-Transfer (TOT) models, NHAI secured **₹28,307 crore** toward its ₹30,000 crore monetisation target for the financial year.
- **Portfolio Footprint:** Raajmarg InvIT acquired the rights to 5 operational highway assets extending across Jharkhand, Tamil Nadu, Andhra Pradesh, and Karnataka for a baseline concession value of approximately **₹9,500 crore**.

Criticisms and Challenges

- **Traffic and Toll Fluctuation Risks:** Dividends depend entirely on toll cash flows, leaving retail investors exposed to systemic revenue risks from economic slowdowns, fuel price surges, or regional traffic disruptions.
- **Prolonged Asset Deferrals:** Complexities in evaluating and bundling projects have previously caused target slippages and timeline delays in transferring roads to InvIT models.
- **Operational Execution Pressures:** Retaining public trust will demand consistent, top-tier highway maintenance and zero-tariff disputes from the project concessionaires

12. Ship Repair Ecosystem Scheme:

The **Ship Repair Ecosystem** initiatives operate as a **Central Sector Scheme** under the **umbrella** of the **Sagarmala Programme**, directly governed by the **Ministry of Ports, Shipping and Waterways (MoPSW)**.

The primary implementing agencies include the **Directorate General of Shipping (DG Shipping)**, the **Inland Waterways Authority of India (IWAI)**, and major Public Sector Undertaking (PSU) shipyards such as Cochin Shipyard Limited (CSL).

Aims & Objectives

- **Reduce Foreign Dependence:** Keep high-value ship repairs within domestic facilities to save foreign exchange.

- **Boost Global Market Share:** Increase India's share in the global ship repair market from less than 1% towards the targets set under the **Maritime India Vision 2030**.
- **Strengthen River Freight Infrastructure:** Service and maintain vessels navigating critical national waterways.
- **Generate Regional Employment:** Promote economic development and create thousands of local engineering and technical jobs.

Funding Mechanism

Funding is directly allocated through Central Sector outlays, drawing from the multi-billion **Maritime Development Fund (MDF)**, the **Shipbuilding Financial Assistance Scheme (SBFAS)**, and the **Shipbuilding Development Scheme (SbDS)**.

- **Central Outlay:** Integrated into the shipping sector's capital allocations starting from the 2026–27 fiscal cycle.
- **Public-Private Partnership (PPP):** Leverages co-investments from private players to scale infrastructure.
- **Financial Subsidies:** Tailored via the SBFAS (total corpus of ₹24,736 crore) providing 15% to 25% financial assistance based on the vessel category.

Key Features

- **Inland Ecosystem Hubs:** Focuses on specialized river-freight infrastructure, establishing specific ship-repair nodes along the Ganga river network.
- **Deep-Draft Capability:** Builds mega dry docks capable of accommodating large vessels up to 300 metres long.
- **Mega Clusters Integration:** Integrates engineering components, R&D facilities, and MSME vendors near repair yards.

Scheme Profile Overview

Metric	Details
Ministry	Ministry of Ports, Shipping and Waterways (MoPSW)
Implementing Agencies	DG Shipping, IWAI, and Major PSU/State Ports

Scheme Category	**Central Sector Scheme** (100% funded by Central Government)
Scheme Nature	**Umbrella Scheme Component** (under the broader Sagarmala Programme)
Target Infrastructure Focus	Deep-sea commercial shipyards and Inland River Waterways

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Status Update (2026) & Recent Achievements

- **Inland Waterways Expansion:** The Union Budget 2026–27 officially launched a dedicated ship repair ecosystem for inland water networks, establishing two prominent hubs at **Varanasi (Uttar Pradesh)** and **Patna (Bihar)** on National Waterway-1.
- **Vadinar Facility Approval:** The Union Cabinet approved a mega Ship Repair Facility at **Vadinar, Gujarat**, closing a critical structural gap by allowing domestic repairs for ships up to 300 metres in length.
- **Kochi ISRF Commissioning:** The state-of-the-art **International Ship Repair Facility (ISRF)** in Kochi became operational at an investment of ₹970 crore, introducing a 6,000-tonne ship lift system with six multi-dock workstations.
- **Green Recycling Integration:** Introduced the Ship Recycling Credit Note mechanism, which rewards ship owners with a credit equivalent to 40% of a vessel's scrap value to incentivize domestic repair loops.

Critical Challenges & Criticism

- **High Commercial Cost Gap:** Domestic shipyards still face structural cost disadvantages. Indian-built or repaired commercial ships cost **20% to 30% more** than competitors in China, South Korea, and Japan due to steep steel tariffs and domestic finance interest rates.
- **Underutilized Dry Docks:** Parliamentary reviews highlighted that despite active naval repair pipelines, several major commercial dry docks across key state ports remain severely underutilized or completely idle.

- **Environmental Concerns:** Environmental groups have flags regarding the expansion of inland waterway repair hubs, warning that extensive river dredging and industrial effluents could disrupt the fragile riverine ecosystems of the Ganga basin.
- **Ancillary Component Deficit:** India lacks a localized manufacturing base for advanced marine parts, forcing shipyards to import complex machinery and design software, which leads to extended turnaround delays

13. PM E-DRIVE Scheme (2024–2026):

The **PM E-DRIVE Scheme** (PM Electric Drive Revolution in Innovative Vehicle Enhancement) is a **Central Sector Scheme** designed to accelerate mass electric vehicle (EV) adoption and build a robust domestic manufacturing ecosystem across India. Officially launched on **1 October 2024**, it acts as a critical **flagship initiative** under India's green mobility transition, replacing the previous FAME-II program.

Core Institutional Framework

- **Ministry:** Administered by the Ministry of Heavy Industries (MHI).
- **Implementing & Monitoring Agency:** Overseen by the **Project Implementation and Sanctioning Committee (PISC)**, an inter-ministerial empowered body headed by the Secretary of Heavy Industries.
- **Nature of Scheme:** It is a **Central Sector Scheme** (100% funded by the Central Government) rather than a centrally sponsored scheme.
- **Classification:** It operates as India's primary **flagship scheme** for electric mobility.

Aims and Objectives

- **Accelerate EV Adoption:** Speed up the penetration of electric two-wheelers (e-2Ws), electric three-wheelers (e-3Ws), e-buses, e-trucks, and e-ambulances.
- **Establish Infrastructure:** Mitigate range anxiety by systematically deploying nationwide public charging infrastructure.
- **Domestic Supply Chain Resilience:** Promote self-reliance (Aatmanirbhar Bharat) by localising critical EV parts.
- **Environmental Impact:** Reduce fossil fuel dependency and significantly lower urban air pollution.

Funding Mechanism and Outlay

- **Total Outlay: ₹10,900 crore** originally targeted for a two-year deployment window.
- **Demand Incentives (₹3,679 Crore):** Direct financial subsidies provided to lower upfront costs for buyers.

- **E-Buses Capital Grants (₹4,391 Crore):** Disbursed directly to state public transport undertakings.
- **Charging Infrastructure (₹2,000 Crore):** Exclusively reserved for setting up fast public chargers.
- **Testing Agency Upgradation (₹780 Crore):** Funding given to modernise MHI-identified testing agencies to manage emerging EV tech.

Key Features

- **Aadhaar-Authenticated e-Vouchers:** Buyers use an **Aadhaar-linked, face-authenticated e-voucher** generated at the time of purchase to claim immediate discounts from dealers.
- **Phased Manufacturing Programme (PMP):** Incentives are strictly tied to manufacturers progressively localising components over time.
- **Commercial & Public Vehicle Focus:** Subsidies primarily apply to vehicles registered for commercial/public transport use, though **private e-2Ws** remain eligible.
- **BHEL Digital "Super App":** Planned unified software system for EV drivers to locate chargers, check active slot availability, and process payments seamlessly.

Recent Status and Technical Deadlines (As of 2026)

Following a comprehensive policy update by the Ministry of Heavy Industries on **27 March 2026**, the scheme transitioned into a strict **fund-limited program** with adjusted target timelines:

- **Timeline Extensions:** The terminal eligibility window for **electric two-wheelers** was shifted to **31 July 2026**. Meanwhile, the terminal timeline for **electric three-wheelers** was officially extended to **31 March 2028**.
- **Fiscal Caps:** If the ₹10,900 crore budget or sub-component limits are exhausted before these deadlines, the specific incentive windows will automatically close ahead of time.
- **Union Budget 2026 Allocation:** The Union Budget 2026-27 carved out a dedicated **₹1,500 crore allocation** specifically to support active e-bus procurement and charger rollouts for the fiscal year.

Key Achievements

- **EV Sales Penetration:** Effectively supported the registered sale of **over 22.12 lakh electric vehicles**.
- **E-2W Momentum:** Disbursed over **₹1,182 crore in direct OEM reimbursements**, covering more than 14.39 lakh distinct electric two-wheelers.
- **Mass Public Infrastructure Mobilisation:** Groundwork completed to scale infrastructure toward a macro target of **72,300 public fast charging stations** across key cities and major transport corridors.

Criticisms and Key Challenges

Criticism Category	Specific Core Concern
Exclusion of Key Passenger Vehicles	Complete absence of subsidies for **private electric passenger cars (e-4Ws)** and hybrid vehicles, which slows adoption across mainstream consumer segments.
Last-Mile Delivery Policy Gap	Exclusion of **N1 category light commercial vehicles** hurts zero-emission last-mile logistics for e-commerce and SMEs.
Logistical Freight Bottlenecks	The strict mandate for a vehicle **scrappage certificate** to unlock e-truck subsidies yielded almost zero utilization due to a severe nationwide shortage of operational commercial scrappage centres.
Charging Execution Delays	Physical infrastructure growth remains slow due to localized grid capacity constraints, land acquisition delays, and inconsistent Time-of-Day (ToD) tariff adoptions across state electricity boards.
Supply Chain Disruptions	Strict compliance with localization norms under the PMP is heavily constrained by India's high import dependency on vital battery components like lithium, cobalt, and rare-earth magnets.

14. Cashless Treatment for Road Accident Victims:

The **PM RAHAT (Road Accident Victim Hospitalization and Assured Treatment) Scheme**—officially launched nationwide by the Prime Minister in February 2026—is India's statutory cashless treatment program. It operates as a **Central Sector Scheme** under the **Ministry of Road Transport and Highways (MoRTH)**. It is framed under Section 162 of the Motor Vehicles Act, 1988.

Institutional Framework

- **Nodal Ministry:** Ministry of Road Transport and Highways (MoRTH).
- **Implementing Agency:** The **National Health Authority (NHA)** serves as the primary technical and implementation partner at the central level, working in close coordination with State Health Agencies (SHAs), police forces, and empanelled hospitals.
- **State Nodal Agency:** The **State Road Safety Council (SRSC)** coordinates local execution.
- **Classification:** It is a **Central Sector Scheme** fully guided by central statutory mandates and funded through central mechanisms.
- **Scheme Nature:** It acts as a **Flagship Scheme** for emergency road trauma care, taking precedence over all other overlapping central or state-level medical assistance schemes.

Aims and Objectives

- **Golden Hour Care:** To provide immediate, uninterrupted medical care during the critical "Golden Hour" (the first hour following a severe injury) when prompt intervention can prevent nearly 50% of road accident fatalities.
- **Financial Protection:** To shield road crash victims and their families from catastrophic, immediate out-of-pocket healthcare expenses.
- **Uninterrupted Access:** To ensure that empanelled hospitals extend emergency treatment instantly without demanding upfront deposits or payments.

Funding Mechanism

Hospital reimbursements are facilitated entirely via the **Motor Vehicle Accident Fund (MVAF)**, which splits costs into two distinct accounts:

1. **Insured Vehicle Cases:** Financed through mandatory financial contributions managed by the General Insurance (GI) Council from general insurance companies.
2. **Uninsured and Hit-and-Run Cases:** Fully covered via direct **Budgetary Support** allocated by the Government of India. For instance, a dedicated budget of ₹272 crore was specified for these cases.

Key Features

- **Financial Coverage:** Provides cashless trauma and polytrauma treatment up to **₹1.5 lakh per victim**.

- **Time Framework:** Covers the medical expenses incurred for a maximum of **7 days** from the date of the accident.
- **Universal Eligibility:** Open to all individuals injured in a road accident involving a motor vehicle on any road category, irrespective of their nationality.
- **Stabilization Care:** Guarantees standard stabilization treatment for up to 24 hours in non-life-threatening situations and up to 48 hours in critical, life-threatening scenarios.
- **Digital Integration:** Amalgamates MoRTH's **eDAR (Electronic Detailed Accident Report)** platform with the NHA's **TMS 2.0 (Transaction Management System)**. This tracks a digital path from emergency dialing, hospital entry, police authentication, to automated claim clearances.
- **Emergency Response Integration:** Linked to the national **112 Emergency Response Support System (ERSS)** to rapidly dispatch ambulances and guide Good Samaritans (*Rah-Veers*) to the nearest eligible trauma facility.
- **Hospital Portability:** Deems all 36,000+ hospitals empanelled under Ayushman Bharat PM-JAY automatically designated to deliver care under PM RAHAT.
- **Fast Reimbursements:** Stipulates a strict **10-day payment timeline** to hospitals once the State Health Agency clears the digital claim.

Achievements (As of 2026)

- **Nationwide Rollout:** Successfully transitioned from its initial localized pilot programs (tested in Chandigarh, Assam, Puducherry, Haryana, Punjab, and Uttarakhand) into a fully operational nationwide network.
- **Extensive Medical Network:** Integrated over **36,112 hospitals** under the NHA umbrella to handle emergency trauma admissions.
- **High Resolution of Low-Cost Trauma:** Official pilot data revealed that the structure successfully resolved emergency medical costs efficiently, with approximately 98% of early trauma interventions costing under ₹60,000—well within the threshold limit.

Criticisms and Implementation Challenges

- **The ₹1.5 Lakh Financial Cap:** Activists and public health experts argue that the ₹1.5 lakh limit and 7-day restriction are inadequate for severe polytrauma cases that mandate long-term ICU stays, multiple complex surgeries, and prolonged life support.

- **High Police Rejection Rates:** Data disclosed in Parliament indicated that almost **20% of cashless treatment requests** raised by hospitals were rejected during the mandatory police verification phase, exposing bureaucratic frictions in the integrated eDAR framework.
- **Hospital Reluctance:** Delays or complex procedures during the initial police authentication windows (24–48 hours) trigger fears of reimbursement rejections among private hospitals, leading to operational hesitation.
- **Infrastructure Deficits:** While the software architecture is robust, rural segments and critical highway corridors continue to face severe shortages of well-equipped physical trauma centers capable of handling complex emergency surgeries

15. PM Gram Sadak Yojana (PMGSY) Phase IV:

The **Pradhan Mantri Gram Sadak Yojana (PMGSY) Phase IV** is a **centrally sponsored flagship scheme** executed under the administrative jurisdiction of the **Ministry of Rural Development (MoRD)**. Approved by the Union Cabinet on **11 September 2024**, this phase spans from financial years **2024–25 to 2028–29**.

Implementing Agency

The **National Rural Infrastructure Development Agency (NRIDA)** operates as the technical and nodal implementing agency at the central level. At the state level, dedicated **State Rural Roads Development Agencies (SRRDAs)** supervise day-to-day execution.

Aims and Objectives

- **Primary Mandate:** Provide all-weather, single-lane road connectivity to **25,000 eligible, previously unconnected rural habitations** across India.
- **Unit of Connectivity:** Target the "habitation" level rather than revenue villages or gram panchayats.
- **Socio-Economic Integration:** Build networks that directly connect remote communities to vital public utilities, including **educational facilities, healthcare centres, local markets, and growth hubs**.

Funding Mechanism

The total fiscal outlay for PMGSY Phase IV stands at **₹70,125 crore**, distributed between the Centre and States through a cost-sharing framework:

- **Central Share:** ₹49,087.50 crore
- **State Share:** ₹21,037.50 crore

Cost-Sharing Ratios:

- **General / Plain Areas:** 60:40 ratio between the Centre and States.
- **Special Category Areas:** 90:10 ratio for North Eastern States, Himalayan States, and Union Territories.
- **Maintenance Mandate:** State Governments must completely fund the upgradation, renewal, and maintenance of existing networks beyond the initial contract period.

Key Features

1. Demographic Thresholds (Census 2011)

The phase determines connectivity eligibility based on population sizes recorded in the Census 2011:

- **Plain Areas:** Habitats with a population of **500 or more**.
- **Hills, NE Regions, & Desert Areas:** Threshold relaxed to **250 or more**.
- **Left-Wing Extremism (LWE) Districts:** Threshold reduced to **100 or more**.

2. Technological and Green Innovations

- **Mandatory Green Engineering:** Construction must integrate eco-friendly techniques like **Cold Mix Technology, waste plastics, cell-filled concrete, panelled cement, and industrial by-products like fly ash and steel slag**.
- **Digital Mapping:** Infrastructure alignment and Detailed Project Reports (DPRs) are curated via the **PMGSY Gram Sadak Survey App** synced with the PM Gati Shakti National Master Plan to eliminate overlapping projects.
- **Stringent Monitoring:** Project quality is tracked in real-time through the **Online Management, Monitoring, and Accounting System (OMMAS)** alongside the electronic maintenance tracking application **e-MARG**.

Scheme Progress and Achievements (As of 2026)

- **Overall Footprint:** Since the genesis of PMGSY in 2000, over **8.25 lakh km of rural roads** have been sanctioned, with cumulative construction touching nearly 95% completion by early 2026.
- **Phase IV Sanctions:** Thousands of kilometers have been actively sanctioned across implementing states, leveraging a **cluster-based connectivity approach** that lowers population parameters in international border-sharing blocks.
- **Policy Convergence:** Phase IV successfully merged frameworks with the *Dharti Aaba Janjatiya Gram Utkarsh Abhiyan (DA-JGUA)* and *PM-AJAY* to achieve infrastructure saturation in Scheduled Tribe and Scheduled Caste concentrated hamlets.
- **Green Network Expansion:** Over **1.15 lakh km of eco-friendly roads** have been laid across the phases, directly shrinking the carbon footprint of rural assets.

Criticisms and Structural Challenges

- **Outdated Demographic Baselines:** Grounding eligibility criteria purely on the **Census 2011** leaves out newly emerged habitations and expanding rural settlements that have grown rapidly over the last 15 years.
- **Last-Mile Disconnect:** Civil reviews indicate that built roads frequently terminate at the outer boundaries of principal villages, leaving isolated sub-hamlets (*Tolas, Majras, Hamlets*) without end-to-end all-weather accessibility.
- **LWE Area Bottlenecks:** Despite timeframe extensions up to 2026, security threats and difficult topography continue to trigger delays in completing works under the *Road Connectivity Project for Left Wing Extremism Affected Areas (RCPLWEA)*.
- **Quality and Maintenance Deficits:** Several rural routes experience swift degradation within few monsoons due to non-compliance with durability benchmarks and materials tracking failures by state agencies

15. Amrit Bharat Station Scheme:

The Amrit Bharat Station Scheme (ABSS) is a comprehensive infrastructure initiative designed to modernize and transform existing railway stations across India into vibrant, future-ready urban spaces.

Core Institutional Framework

- **Nodal Ministry:** Fully handled under the Ministry of Railways.
- **Implementing Agencies:** Executed primarily by **Indian Railways** through its zonal divisions, Rail Land Development Authority (RLDA), Gati Shakti Units, and specialized departmental construction wings.

- **Scheme Classification:** It operates strictly as a **Central Sector Scheme**. The Union Government finances it entirely, managing execution internally without sharing standard program costs with state budgets.
- **Nature of the Scheme:** It is a **flagship infrastructure scheme** dedicated to national transit modernization. It serves as a vital enabler for other umbrella initiatives, aligning closely with PM Gati Shakti principles, the One Station One Product (OSOP) initiative, and Make in India goals.

Aims and Objectives

- **Creation of City Centres:** Upgrading stations from basic transit points into bustling urban hubs that blend transport, commerce, leisure, business meetings, and shopping.
- **Continuous Phased Development:** Formulating long-term master plans for each site, deploying incremental enhancements based on actual user traffic and localized needs.
- **Multimodal Integration:** Strengthening access roads, removing local bottlenecks, and integrating railway platforms seamlessly with public transport networks.
- **Cultural Representation:** Redesigning station façades and structures to prominently display regional architecture, local history, and heritage motifs.

Funding Mechanism

- The project relies on budgetary allocations under **Plan Head-53 ("Customer Amenities")** of the Indian Railways.
- Initial capital expenditure mandates exceeded **₹24,470 crores**.
- To scale capital, the framework allows for **Public-Private Partnership (PPP)** options alongside private sector and commercial monetization of surrounding airspaces.

Key Features

- **Modern Comforts:** Upgraded waiting lounges, high-speed free Wi-Fi, executive business rooms, integrated cafeterias, and wide multi-level air concourses.
- **Divyangjan-Friendly Access:** High-speed lifts, escalators, specialized access ramps, dedicated parking stalls, and tactile pathways for vision-impaired travelers.
- **Technical Upgrades:** Clean water systems, specialized ballastless tracks near platforms, modern signaling architectures, and sustainable sewage treatment plants.
- **Localized Kiosks:** Dedicated stalls allotted under the *One Station One Product* mandate to elevate regional handicrafts, textile artisans, and local MSMEs.

Performance Status & Achievements (As of 2026)

- **Expanded Coverage:** A total of **1,338 railway stations** across India have been identified for comprehensive redevelopment under the master layout.
- **Completed Milestones:** Prime Minister Narendra Modi successfully inaugurated the first major cluster of **103 fully redeveloped Amrit stations**. Notable early successes include the Haibargaon station in Assam and primary structural updates across 15 sites in Maharashtra.
- **Metropolitan Progress:** In key hubs like Delhi, extensive foundational and structural work has concluded across crucial junctions, including New Delhi, Safdarjung, Bijwasan, and Delhi Cantt stations.

Criticisms and Operational Challenges

- **Brownfield Execution Hurdles:** Active construction faces continuous bottlenecks since operations must proceed without disrupting dense train traffic or passenger movement. Delays stem frequently from shifting underground water pipelines, power cables, and optical fibers.
- **Gaps in Universal Accessibility:** Despite statutory guidelines, advocacy groups and audits—such as those by the Freedom of Movement Coalition—have flagged functional layout gaps, noting that several redeveloped stations remain partially inaccessible or unsafe for persons with disabilities.
- **External Coordination Issues:** While the interior station boundary falls to the railways, resolving traffic bottlenecks on exterior approach roads requires slow, complex coordination with municipal authorities and state bodies.
- **Core Infrastructure Versus Aesthetics:** Commuters and critics point out that while station facades and waiting rooms are visually upgraded, critical track-side challenges—such as route doubling, capacity constraints, and track speed bottlenecks—require deeper capital focus to resolve real transit delays

16. Three New Railway Economic Corridors:

The **Three New Railway Economic Corridors** are massive, multi-modal infrastructure programs executed entirely as a **Central Sector Scheme** under the Ministry of Railways. Introduced under the overarching **PM GatiShakti National Master Plan** (an umbrella initiative), this flagship program serves as a cornerstone for India's long-term logistics strategy.

The Three New Corridors

1. **Energy, Mineral, and Cement Corridor (Energy Economic Corridor):** Concentrates on the transport of heavy bulk commodities.
2. **Port Connectivity Corridor (Rail Sagar):** Establishes seamless rail linkages to major ports for smoother import-export flows.
3. **High Traffic Density Corridor (Amrit Chaturbhuj):** Designed to decongest highly saturated trunk routes.

Core Core Mechanics & Governance

Attribute	Details
Aims & Objectives	• Lower national logistics costs to boost economic competitiveness. • Substantially enhance track capacity to clear passenger ticket waitlists by 2030–31. • Shift freight transport from roads to rail to significantly lower carbon emissions.
Funding Mechanism	• Funded fully by the Central Government via regular Union Budgetary allocations (100% Central Sector Scheme). • **Total Outlay:** Appx. **₹11.17 lakh crore** across 434 identified projects.
Key Features	• Dual-purpose multi-modal lines handling both passenger and freight trains (unlike Dedicated Freight Corridors). • Envisions adding **40,000 kilometres** of new track length across the network.
Implementing Agency	• Ministry of Railways via its zonal bodies and central public sector undertakings (like RVNL and IRCON).

Status and Achievements (As of 2026)

- **Project Pipeline Clearances:** Out of 434 structural projects, **122 projects** covering 12,150 km have achieved formal sanctioning, while another 198 projects remain under active institutional appraisal.
- **Immediate System Decongestion:** Early operational corridors have actively reduced freight transit timelines and eased pressure on passenger routes.
- **Synergistic Infrastructure Safety:** Implementation links directly to a record **₹2,93,030 crore railway capital expenditure** in the 2026 budget, fueling rapid, parallel deployments of the indigenous Kavach Automatic Train Protection system.

Criticisms & Challenges

- **Slow Mobilisation Rates:** Critics highlight the massive gap between identified projects (434) and those physically sanctioned (122) over a two-year window.
- **Executing Complexities:** Inter-ministerial convergence through the PM GatiShakti platform occasionally suffers from bureaucratic friction during land acquisition and environmental clearances.
- **Capital Squeezing Concerns:** The unprecedented allocation of public funds into multi-trillion rupee corridors faces scrutiny over potentially diverting resources away from secondary rural networks and standard non-Vande Bharat passenger safety upgrades

17. Vande Bharat Expansion:

The Vande Bharat project represents the **next-generation transformation of Indian passenger rail**, shifting from a purely functional network into a semi-high-speed, modernized transport system.

Administrative Framework & Scheme Classification

- **Ministry:** Fully managed under the Ministry of Railways.
- **Implementing Agency:** The primary executive agency is the Integral Coach Factory (ICF), Chennai, which leads the indigenous design and assembly, supported by public and private manufacturing partners (e.g., BEML, BHEL, Titagarh Rail Systems).
- **Scheme Type:** It is classified as a **Central Sector Scheme**. All funding originates from the central government with zero financial cost-sharing by State Governments.

- **Nature of Scheme:** It operates as a **Flagship Scheme** of the government, serving as a pillar for the *Make in India* and *Aatmanirbhar Bharat* initiatives.

Aims and Objectives

- **Speed Upgrades:** Introduce semi-high-speed trainsets to drastically cut travel times by up to 45% on major corridors.
- **Indigenous Manufacturing:** Target a domestic localisation rate of around 90% to stimulate the domestic engineering and manufacturing ecosystem.
- **Network Modernization:** Introduce fully air-conditioned, self-propelled distributed-power trainsets, replacing old locomotive-hauled ICF/LHB rolling stock.
- **Sustainability:** Enhance energy efficiency via state-of-the-art aerodynamic designs and regenerative braking systems.

Funding Mechanism

- **Gross Budgetary Support (GBS):** Capital funds are predominantly allocated directly via the Union Budget under Capital Expenditure (CapEx) for rolling stock modernization. For instance, the **Union Budget 2026 allocated ₹2,78,030 crore** to the Railway Ministry to support modern fleets.
- **Institutional Borrowing Model:** Managed by the Indian Railway Finance Corporation (IRFC). The IRFC borrows capital from markets to fund coach manufacturing, owns the physical rolling stock assets, and leases them back to Indian Railways in exchange for deferred annual lease "rent" payments.
- **Dedicated Commercial Financing:** Enabled via commercial initiatives like the Vande Bharat Express Loan Scheme to ease capital constraints for contractors and component vendors.

Key Features of Vande Bharat 2.0 & Sleeper Variants

- **Distributed Power Architecture:** Self-propelled coaches eliminate slow turnaround delays, allowing rapid acceleration and deceleration.
- **Enhanced Safety (KAVACH):** Outfitted with India's indigenous Automatic Train Protection (ATP) system to prevent collision risks.
- **Aerodynamic & Lightweight Design:** Built with lightweight materials (Vande Bharat 2.0 weighs 392 tonnes versus the original 430 tonnes) allowing a design speed cap of up to 180 km/h.
- **Premium Amenities:** Features bio-vacuum toilets, automatic doors, 180-degree rotating seats (in chair cars), infotainment systems, and regional culinary catering options.

Status and Achievements (As of 2026)

- **Operational Expansion:** The fleet has successfully expanded to **164 active train services** connecting 274 districts across India.
- **Overnight Travel Launch:** The first **Vande Bharat Sleeper service** made its highly anticipated operational debut on corridors like Howrah–Guwahati, expanding premium service to long-distance lines.
- **Massive Passenger Volume:** Total passenger traffic soared by 34%, carrying **3.98 crore passengers in the FY 2025-26** period alone, compared to 2.97 crore in FY 2024-25. Total ridership since inception crossed 9.1 crore.
- **High Commercial Demand:** Exceptional public adoption is evident, with average passenger occupancy regularly **exceeding 105%** across primary inter-city lines.
- **Future Targets:** A roadmap is established to scale infrastructure up to 800 trainsets by 2030 and 4,500 by 2047.

Criticisms and Challenges

- **Elitist Fare Structure:** Fares are significantly higher than traditional Mail or Express trains, generating concern that the service caters primarily to upper-middle-class commuters while leaving budget passengers with fewer premium choices.
- **Track Speed Bottlenecks:** Although the trainsets are engineered to reach 160–180 km/h, aged tracks and outdated sub-optimal signaling infrastructure restrict real-world operating speeds to 110–130 km/h on most routes.
- **Conventional Service Disruptions:** Delays and rescheduling of existing passenger/freight trains frequently occur to provide clear right-of-way passage for punctual Vande Bharat routes.
- **Civic Sense and Maintenance Issues:** Rapid deployment has spotlighted operational challenges regarding on-board littering, damage to premium interior fittings, and passenger vandalism

18. <u>PM Rail Yatri Bima Yojana</u>:

The **Optional Travel Insurance Scheme** (often loosely referred to as the PM Rail Yatri Bima Yojana) is a specialized social security program managed by the **Ministry of Railways**. It provides financial protection to train passengers against accidental injuries and deaths during their journey.

Core Aims & Objectives

- Provide a minimal-cost **safety net** for train passengers.
- Ensure substantial **financial compensation** to victims and families after rail accidents.
- Reduce the financial shock of medical emergencies due to train mishaps, terrorist attacks, dacoity, or arson.

Classification & Ministerial Scope

- **Ministry:** Ministry of Railways, Government of India.
- **Implementing Agency:** Indian Railway Catering and Tourism Corporation (**IRCTC**), a wholly-owned undertaking of the Ministry of Railways, alongside partnered private/public general insurance companies (e.g., Shriram General Insurance, ICICI Lombard, and Royal Sundaram).
- **Scheme Type:** It operates as a **Central Sector Scheme**, as it is funded directly via central mechanisms and implemented through a central public sector undertaking (IRCTC) rather than state governments.
- **Flagship/Umbrella Status:** It is an independent, **niche sector scheme** tied to railway digital ticketing, rather than a standalone massive national flagship or overarching social umbrella scheme (unlike the broader *Pradhan Mantri Suraksha Bima Yojana* or *PMSBY*).

Funding Mechanism

- **Passenger-Funded Model:** The scheme operates on a **self-funded/voluntary premium** mechanism.
- Passengers choose to opt-in during digital ticket booking.
- The premium is auto-added to the ticket fare and is fully paid by the passenger.
- The premium rate stands at **₹0.45 (inclusive of taxes)** per passenger per journey.

Key Features

- **Eligibility:** Available only to Indian citizens who book **Confirmed or RAC e-tickets** via the IRCTC website or app. It excludes foreign nationals, counter-purchased physical tickets, unreserved classes, and children under 5 years of age.
- **Journey Duration Cover:** Valid from the actual departure from the originating station up to the arrival at the destination, including the processes of boarding and de-boarding.
- **Compensation Structure:**

Incident	Compensation Amount
Accidental Death	₹10 Lakh
Permanent Total Disability	₹10 Lakh

Permanent Partial Disability	Up to ₹7.5 Lakh
Hospitalization Expenses (Injury)	Up to ₹2 Lakh
Transportation of Mortal Remains	₹10,000

Status Update & Achievements (As of 2026)

- **High Digital Adoption:** With the massive transition of Indian Railways into a digital ecosystem, hundreds of millions of passengers utilize the opt-in feature annually.
- **Affordable Safety Net:** The scheme has successfully maintained an incredibly low premium scale (stabilized at 45 paise). This makes it one of the cheapest travel insurance programs globally.
- **Rapid Multi-Company Claim Processing:** Spreading the insurance underwriting across multiple entities (like ICICI Lombard and Shriram General Insurance) has facilitated quicker payouts directly via NEFT into the victims' accounts following major rail accidents.

Criticism & Challenges

- **Exclusion of Vulnerable Passengers:** Passengers traveling on general unreserved tickets or those purchasing tickets physically at station reservation counters cannot avail of the coverage. This creates an inequity that leaves poorer sections of travelers unprotected.
- **Asymmetry in Premium vs. Payouts:** Past RTI filings revealed a significant gap between the high aggregate premiums collected by insurance corporations and the actual claims successfully settled, drawing criticism regarding corporate profit-hoarding.
- **Cumbersome Documentation:** In the chaos following a rail tragedy, families frequently criticize the scheme for requiring complex administrative paperwork—such as railway authority accident confirmations, disability certificates, and official spot reports—before settling claims

19. <u>UDAN (Regional Connectivity Scheme)</u>:

UDAN (Ude Desh ka Aam Nagrik) is a **Central Sector Scheme** and a **flagship initiative** of the Government of India designed to democratise aviation.

Administrative Framework

- **Ministry:** Operated under the Ministry of Civil Aviation (MoCA).
- **Implementing Agency:** Managed by the Airports Authority of India (AAI) acting as the nodal nodal implementing agency.
- **Scheme Classification:** It is a **Central Sector Scheme** (funded heavily via central mechanisms with operational state concessions) and functions as a **flagship scheme**, rather than an umbrella scheme.

Aims and Objectives

- **Democratise Aviation:** Enable the common citizen to afford air travel.
- **Enhance Regional Connectivity:** Link unserved and underserved airports across the country.
- **Infrastructure Growth:** Revive infrastructure in Tier-2 and Tier-3 cities.
- **Economic Stimulus:** Drive local trade, employment, and tourism in remote hinterlands.

Funding Mechanism

The operational costs are heavily subsidised via a market-driven **Viability Gap Funding (VGF)** structure:

- **Regional Connectivity Fund (RCF):** A dedicated fund pooled using a small levy charged per departure on major domestic routes.
- **Cost Sharing:** The Central Government provides 80% of the VGF, while partner states contribute 20%. In the North-Eastern states, Uttarakhand, Himachal Pradesh, and Union Territories, the ratio shifts to 90:10.
- **Direct Budgetary Outlay:** Augmented directly by central budgetary support for structural expansions.

Core Features

- **Airfare Caps:** Fares are fixed (e.g., approximately ₹2500 per hour of flight for 50% of the plane's seats) to retain affordability.
- **Concessions:** Excises on Aviation Turbine Fuel (ATF) are limited to 2% by the centre, and state VAT on fuel is lowered to 1% or less. Free security, land, and discounted utilities are provided by states.
- **Exclusivity Period:** Selected Airline Operators (SAOs) receive a 3-year exclusive monopoly over awarded regional routes.
- **Intermodal Extensions:** Features specific sub-schemes like **Lifeline UDAN** for emergency cargo, **Krishi UDAN** for agricultural trade, and **International UDAN** for regional exports.

Status and Achievements (As of 2026 Update)

The Union Cabinet formally approved the introduction of **Modified UDAN** spanning a 10-year outlook from **FY 2026-27 to FY 2035-36**.

- **Extended Reach:** The Modified UDAN policy comes with an expanded financial layout of **₹28,840 crore** aimed at developing 100 new airports/aerodromes and introducing 120 new remote destinations.
- **Operational Progress:** As of early 2026, **663 routes have been fully operationalised**.
- **Network Milestones:** Flights connect **95 regional aerodromes** including 15 functional heliports and 2 water aerodromes.
- **Passenger Footprint:** Over **1.62 crore passengers** have flown on more than 3.41 lakh total UDAN flights.
- **Capital Disbursal:** More than **₹4,593 crore** has been distributed to airlines as VGF. Total active commercial airports nationwide spiked from 74 in 2014 up to 159.

Criticisms and Bottlenecks

- **Route Discontinuation:** A significant percentage of initially awarded routes stopped operating once the initial 3-year VGF subsidy timeline expired, highlighting commercial unsustainability.
- **Infrastructural Deficiencies:** Several designated regional runways lack modern instrument landing systems, terminal capacity, proper night-landing capabilities, and air traffic control infrastructure.
- **Airline Failures:** Dependence on smaller, cash-strapped regional carriers has frequently led to airline bankruptcies, grounding awarded routes.
- **Administrative Bottlenecks:** Delays stemming from state-level land acquisitions, regulatory environmental clearances, and structural shortages in civil aviation watchdog (DGCA) manpower.
- **CAG Audit Concerns:** Periodic audits by the Comptroller and Auditor General (CAG) pointed out anomalies in disbursement checks, lack of rigid reconciliation data for VGF claims, and delays in reviving dormant airports

20. <u>Jalvahak Incentive Scheme</u>:

The **Jalvahak Incentive Scheme** is a dedicated **Central Sector Scheme** designed to subsidise and accelerate commercial cargo movement across India's primary inland waterways. Launched in December 2024 by the **Ministry of Ports, Shipping and Waterways (MoPSW)**, it operates as a specific, targeted intervention scheme under India's broader maritime and infrastructure development umbrella.

Scheme Classification & Governance

- **Ministry:** Ministry of Ports, Shipping and Waterways (MoPSW).

- **Implementing Agencies:** Jointly executed by the **Inland Waterways Authority of India (IWAI)** and **Inland & Coastal Shipping Ltd. (ICSL)** (a subsidiary of the Shipping Corporation of India).
- **Scheme Nature: Central Sector Scheme** (100% funded and administered directly by the Central Government).
- **Strategic Scope:** It is a **targeted promotional scheme** mapped to the overarching **Maritime India Vision 2030** and **Maritime Amrit Kaal Vision 2047** frameworks.

Aims and Objectives

- **Logistics Decongesting:** Divert heavy bulk and container freight traffic away from heavily congested national rail corridors and highway networks.
- **Cost Reduction:** Lower the overall logistics GDP-share of India by providing a cheaper, long-haul alternative via natural water channels.
- **Environmental Sustainability:** Reduce carbon footprints by shifting cargo to fuel-efficient and eco-friendly Inland Water Transport (IWT) vessels.
- **Private Confidence:** Demonstrate the commercial readiness and structural reliability of national waterways to major shipping companies, freight forwarders, and trade bodies.

Funding Mechanism

- **Financial Outlay:** A dedicated capital deployment of **₹95.42 crores**.
- **Tenure:** Initially allocated for a fixed **three-year operational window**.
- **Disbursement System:** Operates on a direct **financial reimbursement layout**, paying out cash incentives directly to eligible cargo owners after verification of distance and cargo metrics by IWAI.

Key Features

- **Distance Threshold:** Incentives apply strictly to long-haul cargo transported over continuous distances **exceeding 300 km**.
- **Operating Expenditure Subsidy:** Provides up to **35% reimbursement on actual operating costs** incurred by cargo owners during transit.
- **Geographic Coverage:** Restructured around high-potential corridors:
  - **NW-1:** River Ganga (Kolkata–Patna–Varanasi stretch).
  - **NW-2:** River Brahmaputra (Kolkata to Pandu/Guwahati via the Indo-Bangladesh Protocol Route).
  - **NW-16:** River Barak.
- **Fixed Scheduled Sailing:** Establishes predictable, time-stipulated freight transport runs to replicate standard railway timetables.

- **Market Optimization:** Encourages cargo entities to charter vessels from private third-party operators to promote competitive shipping markets.

Status & Achievements (As of 2026)

- **Modal Share Shift:** Actively driving the target to shift **800 million tonne-kilometers** of freight traffic to waterways.
- **Infrastructure Growth:** Backed by the introduction of the digital **"Jalsamriddhi" portal** to fast-track private sector terminal constructions.
- **Volume Expansion:** Pushing national waterway cargo movement numbers beyond the historical base of 132.89 million tonnes toward the **200 million metric tonne target by 2030**.
- **Sailing Regularity:** Successfully institutionalised fixed-day scheduled vessel sailings from major hubs like the GR Jetty in Kolkata to northern and north-eastern endpoints.

Criticisms & Structural Challenges

- **First & Last Mile Deficiencies:** While river transit is heavily subsidised, overall supply chain costs can remain high due to expensive, fragmented multi-modal handling at endpoints.
- **Siltation and Draft Vulnerabilities:** Maintaining the Least Available Depth (LAD) on rivers like the Ganga and Brahmaputra during dry seasons frequently disrupts the reliability of large vessels.
- **Geographical Restriction:** The subsidy is highly localized to East and North-East river belts (NW-1, NW-2, NW-16), offering little baseline advantage to peninsular coastal states or other operational waterways.
- **Cross-Border Dependencies:** Freight running along NW-2 and NW-16 relies heavily on the Indo-Bangladesh Protocol Route, making its efficiency prone to bilateral geopolitical clearances and custom delays.

21. Coastal Cargo Promotion Scheme:

The **Coastal Cargo Promotion Scheme (CCPS)** (often integrated with the **Jalvahak Scheme** for inland waterways) is a **Central Sector Scheme** designed to incentivize a large-scale modal shift of freight from roads and railways to eco-friendly marine transport. It functions as a key component under the **Sagarmala Programme**, which acts as the overarching **umbrella flagship scheme** for India's port-led development.

Ministry and Implementing Agency

- **Ministry:** Ministry of Ports, Shipping and Waterways (MoPSW).

- **Implementing Agencies:** Inland Waterways Authority of India (IWAI) and **Inland & Coastal Shipping Limited (ICSL)** (a subsidiary of the Shipping Corporation of India).

Aims and Objectives

- **Modal Shift Target:** Increase the modal share of coastal shipping and inland waterways in India's freight mix **from 6% to 12% by 2047**.
- **Logistics Efficiency:** Drastically reduce domestic logistics costs. Marine transport is the most economical option (approx. ₹1.06 per ton-km vs. ₹1.41 for rail and ₹2.58 for road).
- **Decongestion & Decarbonization:** Alleviate traffic pressure on National Highways and Railway Corridors while reducing carbon emissions to align with "Net Zero" maritime targets.

Funding Mechanism

- **100% Central Government Funded:** As a Central Sector scheme, its budgetary outlays are met entirely by the Union Government.
- **Operating Subsidies:** Cargo owners receive up to **35% reimbursement of actual operating costs** for shifting long-haul cargo to designated water routes.
- **Infrastructure Grants:** Financial support (up to 50% for specific state projects) for constructing/upgrading exclusive coastal berths, breakwaters, and capital dredging.

Key Features

- **Distance Requirement:** Eligible only for long-haul freight movements spanning a continuous water journey of **greater than 300 km**.
- **Scheduled Sailings:** Fixed regular shipping corridors deployed across primary National Waterways (NW-1 Ganga, NW-2 Brahmaputra, NW-16 Barak) and the Indo-Bangladesh Protocol (IBP) route.
- **Port Discounts:** Provision of **40% discount on vessel and cargo charges** for coastal vessels at all major domestic ports.
- **Fiscal Relaxations:** Reduction of GST on bunker fuel from 18% to 5% for Indian-flagged vessels alongside priority berthing and Green Channel customs clearances.

Current Status & Achievements (As of 2026)

- **Legislative Backbone:** The passage of the **Coastal Shipping Bill 2025** completely replaced outdated provisions of the Merchant Shipping Act 1958, modernizing the sector's regulatory framework and establishing a *National Database for Coastal Shipping*.
- **Expanded Infrastructure:** Operationalization of **National Waterway-5 (NW-5) in Odisha** successfully connected mineral-rich zones (Talcher, Angul) directly with the export-heavy ports of Paradip and Dhamra.
- **Turnaround Optimization:** Average vessel turnaround times at major ports dropped from 52.87 hours (2021-22) to **49.47 hours** in 2025-26.
- **Inland Ecosystem Growth:** Budgetary push enabled localized ship repair ecosystems directly along rivers in **Varanasi and Patna**, addressing critical maintenance infrastructure gaps for inland vessel operators.

Criticisms and Operational Bottlenecks

- **First-Mile/Last-Mile Gaps:** Shifting from door-to-door road logistics remains difficult. The financial viability of water transport is often eroded by high handling costs during the road-to-ship transition at terminals.
- **Environmental & Seasonal Vulnerabilities:** India's inland waterways face severe **seasonal water level fluctuations and silting**. This limits real-time operating capacities to just 25–30% during dry seasons, making fixed delivery schedules unreliable for heavy industries.
- **Capacity Risks for Shipowners:** Industry operators point out that deploying ships exclusively for coastal trade is commercially risky due to a **lack of guaranteed, long-term cargo volumes** compared to higher-margin Export-Import (EXIM) ocean trade.

To explore specific elements of the maritime policy further, tell me if you would like to:

- Examine the **financial incentive calculations** for a specific cargo route.
- Review the specific provisions of the newly passed **Coastal Shipping Bill 2025**.
- Analyze the map and list of the **20 new National Waterways** scheduled for development

22. "Reform Express" Initiative:

The **"Reform Express" Initiative** is a major policy and governance framework launched by the Government of India to structurally modernise, accelerate, and digitalise national operations. Led prominently by the railway sector, it acts as a dynamic roadmap to transition legacy systems into high-efficiency networks.

Administrative and Structural Framework

- **Ministry:** Spearheaded directly by the Ministry of Railways.
- **Implementing Agency:** Executed by Indian Railways along with its various zonal components and technical affiliates like IRCTC.
- **Scheme Classification:** It operates as a **Central Sector Scheme** framework. All policies, updates, and finances are directly driven and borne by the Central Government via the Union Ministry.
- **Flagship/Umbrella Status:** It is designated as a **Flagship Initiative**. It functions as a foundational policy driver mapping directly into India's long-term macro goals like the National Logistics Policy, PM Gati Shakti, and the grand blueprint of *Viksit Bharat 2047*.

Aims and Objectives

- **Legacy System Overhaul:** Replacing outdated, manual procedures with high-tech, AI-driven automation.
- **Logistics Cost Reduction:** Dropping the national "cost of doing business" by optimising bulk essential transport networks.
- **Execution Integrity:** Eradicating systemic corruption, ticket-scalping ("touting"), and corrupt under-bidding in national infrastructure projects.
- **Delivery Excellence:** Enhancing passenger comfort, transit elasticity, and real-time accountability at grassroot levels.

Funding Mechanism

- **Union Budget Allocations:** Funded completely through Central internal resource generation and capital expenditure budget allocations specified under the Union Budget.
- **Public-Private Capital:** Leverages institutional private investments through modern infrastructure models like extended Gati Shakti Cargo Terminal (GCT) multi-year partnerships.

Core Features and Implementation Pillars

The initiative concentrates its target deliverables across three fundamental pillars:

| Passenger Convenience || Cargo Logistics || Construction Quality |

- **Passenger Convenience:** Features digital flexibility, letting travelers dynamically alter boarding stations up to 30 minutes before train departure, alongside upgraded automatic refund pathways that completely eliminate manual Ticket Deposit Receipt (TDR) obligations.
- **Specialised Cargo Logistics:** Mandates heavy industrial changes, including corrosion-resistant stainless-steel, top-loading, and hydraulic side-discharge containers built to eliminate losses during mass salt and automotive freight transport.
- **Construction Quality Control:** Restructures contract bidding. It implements a mandatory 2% bid security threshold to filter frivolous bids, demands bid-capacity checks for all projects valued over ₹10 crore, and slashes allowed subcontracting limits from 70% to 40% to force primary vendor accountability.

Achievements and Status

- **Policy Expansion:** Expanded successfully to feature a total of nine comprehensive institutional reforms driving structural performance.
- **Ticketing Sanitisation:** Purged approximately 3 crore fraudulent accounts from the IRCTC framework by mandating Aadhaar-based OTP authentications.
- **Contractual Streamlining:** Realigned Gati Shakti Terminal leases, expanding operational rights from 35 to 50 years to attract an estimated ₹30,000 crore in brand new revenue cycles.
- **Digital Acceleration:** Shortlisted 94 advanced technical project pitches under the recently deployed RailTech policy portal to pilot AI and blockchain implementations on active tracks.

Criticisms and Policy Challenges

- **Drastic Cancellation Restrictions:** Heavily penalises travelers by introducing severe ticket cancellation slabs (deducting up to 50% fare between 24 and 8 hours before travel) and completely abolishing last-minute refunds under the 8-hour window.
- **Execution Delays at Local Level:** Critics point out that despite massive policy announcements at the top tier, deep structural shifts face slow deployment timelines at local, ground-level stations.
- **Exclusionary Digital Requirements:** Moving exclusively toward smartphone-reliant, dynamic boarding shifts and mandatory digital logins risks alienating rural and digitally illiterate populations who rely heavily on manual counter ticketing

23. Major Infrastructure Completion: 2025 saw the dedication of the **Udhampur–Srinagar–Baramulla Rail Link (USBRL)**, including the world's highest railway arch bridge (Chenab Bridge), providing all-weather connectivity to Kashmir.

- **New Pamban Bridge**: India's first **vertical-lift railway sea bridge** was inaugurated in April 2025, restoring the vital rail link to Rameswaram.

24. Maritime Amrit Kaal Vision 2047,

The **Maritime Amrit Kaal Vision 2047 (MAKV 2047)** is not a specific financial scheme, but a comprehensive **national strategic roadmap** designed to transform India's blue economy and position the country as a global maritime superpower by 2047.

Administrative Structure & Classification

- **Ministry:** Managed entirely under the Ministry of Ports, Shipping and Waterways (MoPSW).
- **Implementing Agencies:** Executed collectively by multiple entities including **Major Port Authorities**, the **Inland Waterways Authority of India (IWAI)**, and State Maritime Boards.
- **Scheme Type:** Because it is a long-term strategic framework rather than an individual welfare program, it does not fit the typical labels of a Central Sector or Centrally Sponsored Scheme. Instead, it operates as an **Umbrella Strategy Framework**.
- **Core Pillars:** It absorbs and guides core executive policies, including the government's flagship **Sagarmala Programme** and the expanded **Shipbuilding Financial Assistance Policy (SBFAP 2.0)**.

Aims and Objectives

- **Port Capacity:** Scale total port capacity past **10,000 MMTPA** to smoothly manage global trade spikes.
- **Global Shipbuilding:** Lift India into the **top 5 global shipbuilding and repair hubs**.
- **Decarbonisation:** Establish clean shipping practices and achieve **carbon-neutral operations** at major ports.
- **Economic Impact:** Secure **₹80 lakh crore in total investments** to generate 1.5 crore new maritime jobs.

Key Features

- **11 Strategic Themes:** Maps out 300+ action points focusing on port modernization, green fuel transition, and technology.
- **Mega Port Development:** Coordinates the creation of deep-draft mega ports at **Vadhavan** and **Galathea Bay**.

- **Green Infrastructure:** Drives the Harit Sagar Green Port Guidelines to mandate shore-to-ship power and alternative fuel usage.
- **Digital Ecosystem:** Rolls out automated berth allocation alongside the **Maritime Single Window** system.

Funding Mechanism

- **Public-Private Partnerships (PPP):** Monetises port berths and terminals to lean heavily on private capital.
- **Maritime Development Fund (MDF):** Utilizes a dedicated corporate equity pool of **₹25,000 crore** to issue low-interest maritime loans.
- **Fiscal Incentives:** Distributes targeted sector outlays, including **₹24,736 crore** via the Shipbuilding Financial Assistance Scheme.

2026 Status & Achievements

- **Cargo Milestones:** India's Major Ports handled a record **915.17 million tonnes (MT) of cargo** in FY 2025–26, outpacing national targets by 7.06%.
- **Efficiency Gains:** Reduced average turnaround times to **0.9 days**, outperforming major maritime hubs like Singapore and the US.
- **Project Volumes:** Over **1,005 projects worth ₹1.73 lakh crore** are officially underway or completed.
- **Green Hubs:** Deendayal, Paradip, and V.O. Chidambaranar ports have successfully pivoted into **Green Hydrogen and Ammonia bunkering hubs**.

Criticisms & Vulnerabilities

- **Low Tonnage Share:** Despite rapid infrastructure expansions, the global market share of **Indian-flagged vessels remains critically low**, causing a reliance on foreign shipping lines.
- **Underutilized Schemes:** Early iterations of support programs faced structural setbacks; for instance, less than half of eligible domestic shipyards successfully utilized the initial Shipbuilding Financial Assistance allocation.
- **Sovereign Gestation Risks:** The vision demands immense, prolonged financial capital. Critics raise concerns that bureaucratic delays in environmental clearances could stall mega-projects, deterring private investors

25. Mega Transshipment Port: Development of India's first dedicated International Container Transshipment Port (ICTP) at **Galathea Bay, Great Nicobar Island**.

The **International Container Transhipment Port (ICTP) at Galathea Bay** on Great Nicobar Island is India's premier mega-transshipment project, officially designated as a **Major Port** under the administrative control of the Union government.

Aims & Objectives

- **Reduce Foreign Port Dependency:** Recapture nearly 75% of Indian transshipped cargo currently handled at foreign hubs like Colombo, Singapore, and Port Klang.
- **Lower Logistics Costs:** Save Indian ports an estimated **USD 200–220 million annually** in transshipment charges to boost export-import (EXIM) competitiveness.
- **Geostrategic Domination:** Strengthen India's economic, political, and naval presence near the vital **Malacca Strait** and across the broader Indo-Pacific region.

Funding Mechanism

- **Public-Private Partnership (PPP) Model:** The core superstructure and cargo operations will be leased to private developers.
- **Viability Gap Funding (VGF):** The Ministry of Ports provides **₹12,230 crore** (25% of the total cost for Phases 1 & 2) to ensure commercial viability.
- **Equity Limits:** To preserve national security, a special rule mandates a **55% majority ownership stake** by an Indian-controlled entity, capping foreign operators at a minority share.

Key Features

- **Perfect Strategic Location:** Sits just 40 nautical miles from the East-West international shipping lane, which commands 35% of all global sea trade.
- **Ultra-Deep Draft:** Natural water depths exceed **20 metres**, allowing the world's largest ultra-large container ships to dock without expensive dredging.
- **Massive Scalability:** Planned to hold 12 container berths, 2 petroleum (POL) berths, and 1 port craft berth. Its final handling capacity will reach **14.2 to 16 million TEUs**.

Institutional Framework & Classification

- **Ministry:** Ministry of Ports, Shipping and Waterways (MoPSW).
- **Implementing Agencies: Kamarajar Port Limited** functions as the lead state agency alongside the **Andaman and Nicobar Islands Integrated Development Corporation (ANIIDCO)**.
- **Scheme Type:** It operates as a **Central Sector Scheme** as it is fully funded and regulated directly via central ministries and state-owned major ports.

- **Umbrella Context:** It is a critical mega-project executing the **Maritime Amrit Kaal Vision 2047** and falls under the broader **Sagarmala Programme**—the government's flagship umbrella initiative for port-led development.

Status and Achievements (As of 2026)

- **Official Approvals Cleared:** The Public-Private Partnership Appraisal Committee (PPPAC) gave the project formal clearance, finalizing the structural layout.
- **Major Port Status Granted:** The Central government officially recognized Galathea Bay as India's newest Major Port, authorizing direct central funds.
- **Green Light on Clearances:** The development overcame major regulatory obstacles by securing key environmental and forest clearances from the National Green Tribunal (NGT).
- **Phased Timelines Set:** Initial sub-phases are locked into place; Phase 1 is on track to begin operational testing by **2028** with a starting capacity of 4 million TEUs.

Criticisms and Challenges

- **Severe Ecological Threat:** Environmentalists point out that building the port requires the **deforestation of fragile island canopies** and risks destroying nesting beaches for endangered Leatherback sea turtles.
- **Displacement of Indigenous Tribes:** Human rights groups argue that the massive layout threatens the isolated habitats of the vulnerable **Shompen and Nicobarese tribes**.
- **Financial Risk:** Several Indian major port authorities initially balked at investing funds due to competing domestic expansions, raising long-term economic viability questions

26. The Scheme for the Promotion of Flagging of Merchant Ships in India

The **Scheme for the Promotion of Flagging of Merchant Ships in India** (commonly operationalised as the Maritime Fleet Expansion and Subsidy Initiative) is a specialized economic tool aimed at expanding India's merchant shipping footprint.

Administrative & Regulatory Framework

- **Nodal Ministry:** Ministry of Ports, Shipping and Waterways (MoPSW).
- **Implementing Agency:** Directorate General of Shipping (DGS) executes the guidelines, while state-backed financial bodies utilize mechanisms like the **Maritime Development Fund**.

- **Scheme Categorization:** It is a **Central Sector Scheme**. It is 100% funded directly by the Central Government of India without matching financial commitments from states.
- **Strategic Blueprint:** It operates as a focused **flagship component** aligned under the broader, overarching umbrella of the Maritime India Vision 2030 and **Maritime Amrit Kaal Vision 2047**.

Aims, Objectives, and Features

Key Objectives

- **Enhance Strategic Autonomy:** Mitigate reliance on foreign-flagged vessels to secure vital supply lines (e.g., crude oil and LNG imports) during global geopolitical disruptions.
- **Boost Indian Tonnage:** Substantially expand the domestic merchant fleet capacity by incentivizing the registration of ships under the Indian flag.
- **Promote Atmanirbhar Bharat:** Enable domestic shipping lines to win global import cargo tenders issued by central ministries and Public Sector Enterprises (CPSEs).

Core Features & Funding Mechanism

- **Financial Outlay:** Initially launched with an outlay of **₹1,624 crore**, supplemented by the **₹25,000 crore Maritime Development Fund** to support vessel acquisition.
- **Subsidy Tier System:** Provides direct financial support based on vessel age and registry timing:
  - **15% subsidy** of the lowest foreign bid (L1) for ships registered under the Indian flag after February 1, 2021, that are less than 10 years old.
  - **10% subsidy** for existing Indian-flagged vessels that were less than 10 years old on February 1, 2021.
  - **0% subsidy** for ships older than 20 years to phase out obsolete tonnage.
- **Right of First Refusal (ROFR):** Grants Indian shipping companies a structural advantage in government procurement by allowing them to match the lowest international bid within a specific price band.

2026 Policy Status and Recent Updates

- **Five-Year Extension:** In May 2026, the Union Cabinet officially extended the ship-flagging subsidy scheme for an additional five years, locking in operational support **until the Financial Year 2030–31**.
- **Targeted Vessel Addition:** Under the 2026–27 roadmap, the Ministry has prioritized adding **62 new commercial vessels**, targeting a swift capacity increase of **2.85 million Gross Tonnage (GT)**.
- **SCI Fleet Expansion:** The state-run Shipping Corporation of India (SCI) has initiated capital-infused procurement for modern, medium-range product tankers to guard against supply shocks in volatile zones like the Strait of Hormuz.

Achievements vs. Criticisms (As of 2026)

Achievements	Criticisms & Challenges
Crisis Resilience: Successfully secured vital commodity lanes and cargo imports during severe geopolitical supply chain deadlocks in West Asia.	**Global Yard Backlogs:** High international shipyard congestion has severely delayed the delivery times of newly ordered commercial vessels.
Strategic Fleet Modernization: Tied directly to the newer **Shipbuilding Financial Assistance Scheme (SBFAS)** to build 350 domestic ships.	**Taxation Disadvantages:** Indian shipping companies face a complex, unfavorable domestic tax structure compared to open-registry foreign flags (e.g., Panama, Liberia).
Increased Tender Success: Domestic carriers used ROFR to beat foreign competition for government-guaranteed bulk cargo.	**Private Sector Hesitation:** Private operators argue that a 10%–15% subsidy does not fully offset the higher operating costs of hiring mandatory Indian crews.

Note: Fleet Expansion: India's shipping fleet capacity crossed **14.2 million GT** in FY26, with 92 new vessels added to reduce dependency on foreign-owned ships.

27. Indian Ports Act, 2025,

The **Indian Ports Act, 2025** is a legislative act, not a central scheme. It provides a legal and regulatory framework to replace the colonial-era Indian Ports Act, 1908. It is not classified as a central sector, centrally sponsored, flagship, or umbrella scheme.

Core Administrative Details

- **Ministry:** Ministry of Ports, Shipping and Waterways.
- **Implementing Agencies:** The **Maritime State Development Council (MSDC)** coordinates policy nationally. State-level **State Maritime Boards (SMBs)** govern and administer non-major ports locally.
- **Funding Mechanism:** Funded through consolidated internal revenues, public-private partnerships (PPP), port tariffs, and budgetary allocations under maritime programs like the Sagarmala initiative.

Aims and Objectives

- **Modernise Port Governance:** Replace the century-old 1908 regulatory text with contemporary global maritime laws.
- **Promote Cooperative Federalism:** Bridge the policy gap between the Central Government and coastal states.
- **Facilitate Ease of Doing Business:** Simplify structural compliance, tariff mechanisms, and clearing logistics.
- **Enforce Global Environmental Standards:** Adapt Indian coastlines to modern green norms and accidental pollution control policies.

Key Features

- **Statutory Status for MSDC:** Elevates the Maritime State Development Council to a formal statutory consultative body chaired by the Union Minister.
- **Empowerment of State Maritime Boards:** Gives uniform statutory recognition to SMBs to handle licensing, infrastructure planning, and development for minor/non-major ports.
- **Dispute Resolution Committees (DRCs):** Mandates setting up dedicated state-level DRCs to clear disputes between port users, concessionaires, and service providers out of civil court jurisdiction.
- **Mega Port Classification:** Introduces a brand new sub-category of "Mega Ports" with tailored operational thresholds.
- **Global Green Compliance:** Enforces active obedience to international treaties like the MARPOL convention (marine pollution prevention) and Ballast Water Management.
- **Digital Integration:** Establishes a Maritime Single Window and advanced vessel traffic tracking to digitalise customs and clearance logs.

Performance Review (As of 2026)

Achievements

- **Slashed Turnaround Times:** Integrated digital processes and the 'One Nation One Port Process' initiative dropped average vessel turnaround times significantly across major trial ports.
- **Operationalised DRCs:** Multiple coastal states successfully established operational Dispute Resolution Committees, reducing maritime legal backlogs.
- **Unified State Infrastructure Data:** The MSDC rolled out the first phases of the National Perspective Plan, synthesising data mapping for both major and private minor ports.
- **Green Shift:** Mandatory environmental compliance audits accelerated shore-to-ship green power deployment at select terminals.

Criticism and Concerns

- **Infringement on State Autonomy:** Legal analysts argue that requiring Central clearance for basic port ownership/control changes dilutes State authority over the Concurrent list (non-major ports).
- **Concentration of Penal Judicial Power:** Designating the government-appointed port conservator with absolute penalty adjudication powers lacks a direct internal check-and-balance architecture.
- **Unclear Mega Port Criteria:** The delay in releasing exact metrics for the new "Mega Port" sub-classification slowed down pipeline infrastructure capital investments

28. Draft Water Metro Policy 2026:

The Draft National Water Metro Policy, 2026 is a comprehensive national framework introduced by the Government of India to formalise and integrate structured, water-based passenger ferry networks into the urban public transit rapid ecosystem.

Aims and Objectives

- **Decongestion:** Easing passenger pressure on saturated road and rail infrastructure by utilising unexploited urban waterways.
- **Carbon Reduction:** Aligning with India's green initiatives (such as the *Harit Nauka Guidelines*) to reduce public transport emissions.
- **Multimodal Integration:** Integrating water terminals with existing metro networks, local buses, and last-mile connectivity services.
- **Enhanced Connectivity:** Providing reliable, high-frequency mass transit solutions for water-locked regions, outlying islands, and tourism hubs.

Administrative and Scheme Classification

- **Ministry:** The policy is initiated under the Ministry of Ports, Shipping and Waterways (MoPSW).
- **Scheme Type:** It operates as a **Centrally Sponsored Scheme (CSS)**. The Union Government and individual State Governments split the capital expenditure evenly (a 50:50 cost-sharing pattern).
- **Flagship or Umbrella:** It is structured as a standalone, transformative **Flagship Scheme** aimed specifically at redefining urban water transport mobility across the nation.
- **Implementing Agencies:**

- At the national level, the Inland Waterways Authority of India (IWAI) functions as the technical nodal agency tasked with setting engineering, vessel, and safety standards.
- At the municipal level, projects are executed by **City-level Special Purpose Vehicles (SPVs)** created jointly by the Central and respective State governments.

Funding Mechanism

- **Total Outlay:** The program carries an estimated capital cost of **₹18,594 crore**.
- **Central Contribution:** The Union Government has committed a total of **₹9,280 crore** over a 10-year horizon starting from April 2026 to March 2036.
- **Funding Formats:** Projects can be funded through direct Engineering, Procurement, and Construction (EPC) routes, Public-Private Partnerships (PPP) backed by Viability Gap Funding (VGF), or via full central assistance for highly sensitive strategic National Waterway routes.
- **State Liabilities:** States are legally required to provide land free of cost and bear any supplementary land acquisition expenditure.

Core Features

- **Green Propulsion:** Mandates eco-friendly electric catamarans and low-emission hybrid vessels as the structural standard to avoid water pollution.
- **Standardisation:** Encourages the bulk procurement of uniform vessel blueprints to promote indigenous domestic shipbuilding.
- **Digital Systems:** Integrates high-tech passenger counting gates, real-time vehicle GPS tracking, and single-ticket smart transit cards.
- **Alternative Revenue Streams:** Leverages non-fare box commercial revenue such as terminal advertising, recreational boating, and waterfront property development to sustain low commuter fare models.

Current Status and Achievements (As of 2026)

- **Kochi Reference Model:** The Kochi Water Metro remains India's only fully operational reference network, validating the technical feasibility of electric public ferry services.
- **National Feasibility Expansion:** The IWAI has officially commissioned extensive feasibility and viability surveys across **17 major Indian cities**, including Ayodhya, Varanasi, Kolkata, Guwahati, Mumbai, Srinagar, and Chennai.

- **Green Technology Trials:** Hydrogen fuel-cell and electric catamaran trials have been successfully completed in pilgrim centers like Varanasi and Ayodhya.

Criticisms and Key Challenges

- **High Initial CapEx:** Upfront capital demands for specialised marine vessels and advanced automated charging infrastructure remain exponentially high.
- **Ridership Uncertainty:** The policy sets a baseline target of 2,000 daily passengers per route, raising concerns that specific regions may suffer low commercial ridership.
- **Environmental Disruption:** Active marine dredging required to sustain navigable drafts across shallow channels has faced backlash over local ecological disturbance.
- **Complex Multi-Agency Bureaucracy:** Overlapping jurisdictions between State maritime boards, local municipal bodies, urban land transport authorities, and central ministries risk causing regulatory execution delays.

If you need further details on specific regions, let me know:

- Which of the **17 prospective cities** you want to track
- Specific technical specifications of the **electric catamaran fleets**
- Financial structures for **Public-Private Partnership (PPP)** models under the scheme

29. Multimodal Logistics Parks (MMLPs):

The **Multi-Modal Logistics Parks (MMLPs)** initiative is a **Central Sector Scheme** fully funded and orchestrated by the Union Government.

- **Ministry:** Nodal management lies with the Ministry of Road Transport and Highways (MoRTH).
- **Implementing Agencies:** The primary implementation vehicle is **National Highways Logistics Management Limited (NHLML)**, a 100% owned subsidiary and Special Purpose Vehicle (SPV) of the National Highways Authority of India (NHAI). Other regional/cooperative implementations involve the National Highways and Infrastructure Development Corporation Limited (NHIDCL) in Northeast India, alongside a tripartite agreement involving the Inland Waterways Authority of India (IWAI) and Rail Vikas Nigam Limited (RVNL).

- **Scheme Classification:** It functions as a **flagship infrastructure project** originally sanctioned under the **Bharatmala Pariyojana** Phase-I umbrella program, and is now structurally monitored under the **PM Gati Shakti National Master Plan**.

Aims and Objectives

- **Logistics Cost Reduction:** Lowering India's macro logistics costs from ~14% of GDP to **less than 10%** to match global standards.
- **Freight Consolidation:** Transitioning the nation's freight from point-to-point movement to an optimized **hub-and-spoke model**.
- **Modal Shift Optimization:** Facilitating seamless, efficient cargo transfers between roads, railways, dedicated freight corridors, and inland waterways.
- **Environmental Mitigation:** Cutting urban vehicular pollution and highway traffic congestion by shifting long-haul freight to rails.

Funding Mechanism

- **PPP Execution:** Projects operate under a **Public-Private Partnership (PPP)** model on a **Design, Build, Finance, Operate, and Transfer (DBFOT)** basis with concession periods stretching up to 45 years.
- **Equity Sharing:** Capital expenses are split using a **50:50 funding model** or government SPV setups. Equity shares typically see State Governments providing land, while the Central Government (via NHLML) handles external connectivity infrastructure (rail lines and fiber routes).
- **Model Concession Agreement (MCA):** Updated in **March 2026**, a revamped MCA has enhanced ease-of-doing-business, streamlining KPIs (like freight train turn-around time), integrating strict data privacy IT mandates, and easing commercial dispute resolutions.

Core Features

- **Massive Scale:** Every official MMLP must span a minimum area of **100 acres (40.5 hectares)**.
- **Intermodal Connectivity:** Immediate, localized physical links to National Highways, railway sidings, and, where applicable, inland waterways or ports.
- **Advanced Storage:** High-tech automated warehouses, cold storages, mechanized bulk handling equipment, and custom containment yards.
- **Value-Added Processing:** Provisions for on-site product packaging, labeling, testing, and container tagging.

- **Commercial Zones:** Administrative complexes, customs clearance blocks, custom terminals, mechanics' stations, and rest quarters for drivers.

Key Status and Achievements

As of the official review by the government, **35 strategic locations** have been authorized for development across India.

PIB +1

Key MMLP Projects	Current Operational Status & Execution
Jogighopa (Assam)	India's first international MMLP; its core infrastructure is completed and serves as a major gateway to the North-East.
Mappedu, Chennai (Tamil Nadu)	Phase-I development is nearing completion and is slated to go live for freight handling by **mid-2026**.
Bengaluru (Karnataka)	Developed over 400 acres at Muddelinganahalli with an estimated cost of ₹1,770 crore; advanced work is underway for a phased rollout.
Nagpur & Indore	Concessions have been awarded and site layout development is actively progressing into advanced stages.
Varanasi (Uttar Pradesh)	New tri-modal agreements were inked to create a state-of-the-art MMLP linking to National Waterway-1 and the Eastern Dedicated Freight Corridor.

Operational Criticisms and Challenges

- **Prolonged Land Acquisition:** Complex land acquisition models across different state jurisdictions have led to bureaucratic stalemates, delaying several of the 35 planned sites.

- **High Capital Requirements:** Private developers have expressed hesitation over the massive, long-term upfront investment outlays required before the assets yield viable volume turnarounds.
- **Uneven Inter-Ministerial Synergy:** Despite PM Gati Shakti coordination, synchronizing state road builds with the Ministry of Railways' siding approvals has faced persistent timeline gaps.
- **Skewed Regional Progress:** While five major hubs (Jogighopa, Chennai, Bengaluru, Nagpur, Indore) are nearing commercial operation, many other planned sites remain stuck in prolonged pre-feasibility or Detailed Project Report (DPR) stages.

30. Ethanol Blending: The **Ethanol Blended Petrol (EBP) Programme** is a **Central Sector Scheme** implemented as a dedicated flagship initiative governed under the overarching **National Policy on Biofuels**. Driven by the **Ministry of Petroleum and Natural Gas (MoPNG)**, the program achieved its monumental **20% nationwide ethanol blending target (E20) ahead of schedule**, shifting the operational mandate from a target-based rollout to standard compliance across India.

Administrative Framework

- **Nodal Ministry:** Ministry of Petroleum and Natural Gas (MoPNG).
- **Implementing Agencies:** Public Sector **Oil Marketing Companies (OMCs)** like IOCL, BPCL, and HPCL act as the primary off-takers and blending executors. The Department of Food and Public Distribution (DFPD) handles regulatory clearances for distilleries.
- **Scheme Classification: Central Sector Scheme** (100% funded and coordinated by the Central Government).
- **Policy Nature:** A **Flagship Initiative** functioning under the broader umbrella of the National Policy on Biofuels.

Aims and Objectives

- **Reduce Import Dependence:** Lower India's heavy fiscal reliance on foreign crude oil imports.
- **Environmental Mitigation:** Curb greenhouse gas (GHG) emissions, particularly carbon monoxide and hydrocarbons, to meet net-zero commitments.
- **Support Farmers:** Provide an alternative, lucrative revenue stream for farmers (*Urjadaatas*) by utilizing surplus agricultural crops.
- **Waste Management:** Limit stubble/biomass burning by diverting crop residues to advanced biofuel production.

Funding Mechanism

- **Interest Subvention Scheme:** The Central Government provides interest subvention at **6% per annum** (or 50% of the bank's interest rate, whichever is lower) for 5 years to support entities setting up or expanding distilleries.
- **Long-Term Offtake Agreements (LTOAs):** OMCs offer guaranteed 10-year purchase assurances to dedicated ethanol plants to de-risk private capital investments.
- **Administered Price Mechanism:** The government systematically sets feedstock-specific procurement prices annually to maintain processing margins.
- **Fiscal Incentives:** The Goods and Services Tax (GST) on fuel-grade ethanol stands reduced at a concessional **5% rate**.

Key Features

- **Multi-Feedstock Policy:** Allows ethanol production from diverse 1G sources (sugarcane juice, B-heavy/C-heavy molasses, broken food grains, maize) and 2G sources (agricultural biomass).
- **Mandatory E20 Fuel Standards:** Fuel dispensed across fuel stations complies with **E20 specifications** and maintains a minimum Research Octane Number (RON) of 95.
- **Inter-Ministerial Oversight:** Coordinated by the National Biofuel Coordination Committee (NBCC) to balance agricultural surplus allocation against domestic food security requirements.

Major Achievements (Updated)

- **Early Milestone Accomplishment:** The target of 20% national ethanol blending, originally set for 2030 and later advanced to 2025–26, was **successfully achieved**, with average blending crossing the 20% threshold.
- **Massive Forex Savings:** Substituted millions of metric tonnes of crude oil, saving **over ₹1.63 lakh crore in foreign exchange**.
- **Capacity Explosion:** India's ethanol distillation capacity grew from 1.5 billion litres in 2014 to a resilient ecosystem exceeding **16 billion litres**.
- **Direct Farmer Disbursements:** OMCs have disbursed **over ₹1.43 lakh crore** directly to sugar mills and grain farmers, virtually eliminating traditional sugarcane payment backlogs.
- **Carbon Abatement:** Avoided more than **830 lakh metric tonnes of net emissions**, significantly improving urban air quality indicators.

Criticisms and Challenges

- **Food vs. Fuel Dilemma:** Diverting staple food crops like maize and rice to fuel production triggers domestic food inflation and threatens foundational food security frameworks during deficit rainfall cycles.
- **Water Intensity Stress:** Sugarcane is a highly water-intensive crop. Expanding its cultivation in groundwater-depleted states (e.g., Maharashtra, Uttar Pradesh) exacerbates severe ecological water stress.
- **Vehicle Compatibility & Efficiency Drop:** Ethanol holds roughly **27% less energy density** than pure petrol, causing a minor drop in fuel efficiency. Older, non-compliant vehicles run the risk of engine corrosion due to ethanol's moisture-absorbent properties.
- **Slow 2G Transition:** The infrastructure needed for Second-Generation (2G) ethanol (made from non-food crop residues) faces heavy commercial bottlenecks, leaving the program highly reliant on 1G food crops

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31. "Hydrogen for Heritage" initiative - Hydrogen Rail: Introduction of India's **first indigenous hydrogen-powered train-set** as part of the green mobility push

The introduction of **Hydrogen Rail** in India is structured under the specialized "Hydrogen for Heritage" initiative, which operates as an **indigenous technology-demonstration and eco-tourism project**. Rather than existing as an independent central sector or centrally sponsored scheme, it is strategically linked to India's grander climate policies.

Scheme Nature, Ministry, and Implementation

- **Administrative Ministry:** Ministry of Railways (overall execution) synchronized with the overarching Ministry of New and Renewable Energy (MNRE).
- **Implementing Agency:** Research Designs & Standards Organisation (RDSO) handles design framing and safety, while the Integral Coach Factory (ICF), Chennai leads manufacturing.
- **Scheme Classification:** It acts as a project directly under the **Central Sector (100% centrally funded)** mechanism of the Indian Railways' capital budget, drawing structural validation from the National Green Hydrogen Mission (NGHM).
- **Flagship vs. Umbrella:** It is a targeted, tech-driven **component project** feeding into India's wider **Umbrella Framework** for Net-Zero Transportation by 2030.

Aims and Objectives

- **Decarbonise Hill Routes:** Eliminate diesel locomotive usage entirely on environmentally sensitive narrow-gauge and metre-gauge heritage loops.
- **Achieve Net-Zero Alignment:** Support Indian Railways' strict carbon neutrality timeline.
- **Propel Technology Indigenisation:** Establish local technical expertise in Proton-Exchange Membrane (PEM) fuel cells under the *Atmanirbhar Bharat* vision.
- **Promote Eco-Tourism:** Provide a clean, silent, smoke-free sightseeing experience to premium tourist paths without heavy overhead electrification.

Funding Mechanism

The funding model utilizes direct Central budgetary allocations from the Ministry of Railways. It operates on an estimated prototype and deployment cost breakdown:

- **Per-Train Rolling Stock Capital:** Approximately **₹80 crore per hydrogen train-set**.
- **Ground Infrastructure Capital:** Approximately **₹70 crore per route** dedicated to dedicated production, storage, and pumping installations.

Key Technical Features

- **Power & Capacity:** The flagship configuration consists of a **2400 kW Broad Gauge platform** built as a 10-coach configuration (2 Driving Power Cars at 1200 kW each flanking 8 passenger coaches).
- **Electro-Chemical Propulsion:** Utilizes on-board high-capacity **PEM fuel cells** which combine hydrogen fuel and atmospheric oxygen to produce traction electricity.
- **Emission Profile:** Absolute zero tailpipe greenhouse gases, with the singular exhaust byproduct being **pure water vapour**.
- **Fuel Storage Pressurisation:** Employs safe, specialized on-board fuel tanks storing hydrogen under a dense pressure threshold of **350 bar**.

Status Update & Achievements (As of 2026)

- **Successful On-Track Trials:** In March 2026, India's first indigenous hydrogen train successfully completed its critical **oscillation and speed trials** over a 20-kilometre run between **Jind and Lalit Khera in Haryana**, operating smoothly up to 70 kmph.

- **On-Site Fueling Realised:** A functional, dedicated green hydrogen manufacturing and compression plant has been established directly in **Jind** to support the immediate Jind–Sonipat test corridor.
- **Global Positioning:** The physical roll-out of the 10-coach broad gauge model makes India one of the select few global players (alongside Germany, France, Sweden, and China) testing operations of mainline fuel-cell train-sets.

Operational Criticisms & Roadblocks

- **Prohibitive Initial Costs:** The levelised cost of green hydrogen in India remains high, floating around **$3.5 to $5 per kg**, rendering early operations much costlier than standard electricity grids or diesel.
- **High Capital Overheads:** Infusing ₹150 crore combined per route for a limited 35-train rollout triggers debate over capital utility, considering route electrification yields higher volume capacities.
- **Energy Conversion Inefficiency:** Utilizing grid electricity to generate green hydrogen via electrolysis, compressing it to 350 bar, and running it through fuel cells yields lower round-trip energy efficiency compared to direct wire-to-train overhead electrification.
- **Supply Chain & Safety Risks:** Transporting and managing high-pressure hydrogen requires stringent compliance with PESO standards

32. Zero-Emission Trucking (ZET):

The **Zero-Emission Trucking (ZET) initiative** in India is an institutional, multi-ministry policy framework driven primarily by the **Office of the Principal Scientific Adviser (O/o PSA) to the Government of India**. It does not operate as a standalone conventional welfare scheme; instead, it is a strategic national initiative structured through cross-ministry policies and backed financially by the **Central Sector Scheme** called PM E-DRIVE (Electric Drive Revolution in Innovative Vehicle Enhancement).

Aims and Objectives

- Achieve **100% zero-emission truck sales penetration by 2050** to help meet India's Net Zero 2070 climate target.
- Displace up to **993 billion litres of diesel**, saving approximately ₹116 lakh crore (USD 1.5 trillion) in crude oil imports by 2050.
- Reduce logistics costs in India from 14% of the GDP by an estimated 17% over a vehicle's operational lifetime.

- Curb heavy transport air pollution, as diesel trucks comprise only 3% of the fleet but emit over 42% of transport-related greenhouse gases.

Funding Mechanism

- **Direct Subsidies:** Funded through a dedicated **₹500 crore allocation** specifically for electric trucks under the PM E-DRIVE Scheme.
- **Incentive Caps:** Fiscal support allows a maximum upfront incentive of **₹9.6 lakh per e-truck** paid directly to Original Equipment Manufacturers (OEMs).
- **Mandatory Scrapping:** Incentives are strictly tied to a **mandatory fleet-modernisation rule**, requiring operators to scrap old, polluting diesel trucks to qualify.
- **International Support:** Co-financed by a four-year **Global Environment Facility (GEF) grant** spearheaded by the United Nations Environment Programme (UNEP) to de-risk commercial private lending.

Key Features

- **Priority Freight Corridors:** Strategic deployment across **10 high-impact highway segments** identified for early-stage infrastructure rollout.
- **Alternative Powertrains:** Direct promotion of heavy-duty Battery Electric Trucks (BETs) and Hydrogen Fuel Cell vehicles.
- **30 Targeted Interventions:** A comprehensive Bharat ZET Policy Advisory spanning standard regulations, charging grids, and specialized green financing.
- **Battery Ecosystem:** Frameworks for high-capacity battery swapping stations designed for commercial corridors.

Administrative Architecture

Parameter	Operational Detail
Nodal Ministry	Joint oversight: **Office of the PSA** (Policy design), **Ministry of Heavy Industries (MHI)** (Incentive deployment), and **NITI Aayog** (Strategic coordination).
Implementing	**Project Management Unit (PMU)** located at the **Centre of Excellence for Zero Emission**

Agency	**Trucking (CoEZET), IIT-Madras**.
Scheme Type	Fully funded as a **Central Sector Scheme** under the broader PM E-DRIVE initiative.
Classification	Component of a **Flagship Scheme**. It acts as India's first targeted, technology-focused sub-program for heavy freight decarbonisation.

Achievements (Updated As of 2026)

- **National Blueprint Deployment:** The formal launch and activation of the Bharat ZET Policy Advisory and the *Priority Corridors Report* to direct charging infrastructure investments.
- **Targeted Fleet Procurement:** Deployment of around **5,600 subsidized e-trucks** nationwide, with dedicated regional batches like 1,100 units assigned to Delhi's pollution corridors.
- **Public Sector Leadership:** Major CPSEs like the *Steel Authority of India Limited (SAIL)* committing to purchase 150 heavy e-trucks and mandating a 15% green hiring rule across operations.
- **Industrial Corridors Active:** Commercial testing pilots completed at major maritime logistics hubs including Jawaharlal Nehru Port and Visakhapatnam Port.

Criticisms and Core Challenges

- **Higher Total Cost of Ownership (TCO):** Even with government subsidies, ZETs present a **4% to 20% higher TCO** than diesel equivalents due to high initial asset costs and elevated industrial electricity tariffs.
- **Workforce Displacement:** More than **80% of India's trucking industry is unorganized**; rapid automation and high-tech conversion threaten severe job loss without structured reskilling.
- **Severe Range and Weight Issues:** Heavy battery packs drastically decrease maximum permissible payload capacity, and "range anxiety" limits usage on long-haul routes.
- **Prohibitive Hydrogen Costs:** Hydrogen vehicle alternatives remain **six times more expensive** to purchase and three times more expensive to operate than diesel variants.

33. New Freight Corridors: Budget 2026 proposed a new **Dedicated Freight Corridor** from Dankuni (West Bengal) to Surat (Gujarat) to further decongest the network.

34. New Pamban Bridge: India's first **vertical-lift railway sea bridge** was inaugurated in April 2025, restoring the rail link to Rameswaram.

35. Parvatmala Pariyojana:

Parvatmala Pariyojana (National Ropeways Development Programme) is a **Central Sector Scheme** executed under the **Ministry of Road Transport and Highways (MoRTH)**. It serves as a **flagship scheme** aimed at providing eco-friendly, aerial alternative mobility solutions across India's difficult terrains.

Aims & Objectives

- Provide safe, economical, and world-class **last-mile connectivity** in hilly and remote border regions.
- **Decongest urban public transit** where conventional mass transport systems are saturated or physically non-viable.
- Promote **religious and adventure tourism** by scaling up infrastructure leading to major shrines and tourist spots.
- Act as an energy-efficient alternative to conventional road transport networks to **minimize ecological footprints** in fragile biomes.

Funding Mechanism

- **Public-Private Partnership (PPP)** mode primarily driven by the **Hybrid Annuity Model (HAM)**.
- The Government of India provides up to **60% financial contribution** (Viability Gap Funding/Support), while the private developer bears the remaining 40%.

Implementing Agency

- **National Highways Logistics Management Limited (NHLML)**.
- NHLML is a **100% owned Special Purpose Vehicle (SPV)** of the National Highways Authority of India (NHAI).

Key Features

- **Indigenisation & Scale:** Target to build over **250 ropeway projects spanning 1,200 km** with a mandate to utilize a minimum of **50% indigenous components** under the "Make in India" initiative.
- **Straight-Line Alignment:** Bypasses topographical barriers like rivers, gorges, and dense forest canopies, drastically reducing land acquisition costs and long construction timelines.
- **High Transit Capacity:** Employs state-of-the-art Tri-cable Detachable Gondola (3S) technology capable of ferrying **6,000–8,000 passengers per hour**.

Achievements & Status (As of May 2026)

- **Cabinet Project Approvals:** The Cabinet Committee on Economic Affairs (CCEA) approved massive flagship ropeway routes in Uttarakhand, notably the **Sonprayag to Kedarnath (12.9 km)** project for ₹4,081.28 crore and the **Govindghat to Hemkund Sahib (12.4 km)** project for ₹2,730.13 crore.
- **Urban Breakthrough:** Construction is actively advancing on India's first major public urban mass transit ropeway system, the **Kashi Ropeway in Varanasi (3.85 km)**.
- **Pan-India Expansion:** MoUs have been formalized with **13 States/UTs** (including Himachal Pradesh, Jammu & Kashmir, Arunachal Pradesh, Madhya Pradesh, and Maharashtra) to decentralize execution.
- **Pipeline Scale-up:** Over **60 km of projects are under active bidding or award**, with physical progress initiated on locations like Bijli Mahadev (HP), Dhosi Hill (Haryana), and Shankaracharya Temple (J&K).

Criticisms & Implementation Challenges

- **Fragile Himalayan Ecology:** Severe pushback from environmentalists over deep drilling in ecologically sensitive zones, with experts demanding stricter, exhaustive Environmental Impact Assessments (EIAs) to prevent landslides and soil subsidence.
- **Local and Cultural Resistance:** Local communities and indigenous groups have launched protests against specific sites (e.g., the Bijli Mahadev ropeway in Himachal Pradesh), citing interference with local religious deities and threats to traditional tourism-related livelihoods.
- **Inadequate Feasibility Planning:** The scheme has faced operational friction from global bidding majors due to faulty, primitive Detailed Project Reports (DPRs), which have directly translated to stalled bidding deadlines and delayed financial closures.
- **Friction with Escalating Tariffs:** High operations and maintenance (O&M) overheads compounded by post-pandemic inflation and GST structures have forced operating agencies to spike commuter ticket costs, impacting affordability for budget pilgrims

35. Air Taxi Services: Air Taxi Services in India are managed under the **Regional Connectivity Scheme (RCS) – UDAN (Ude Desh ka Aam Nagrik)** for fixed-wing small aircraft and the newly proposed **Urban Air Mobility (UAM) National Framework** for Electric Vertical Takeoff and Landing (eVTOL) aircraft.

Administrative and Structural Framework

- **Nodal Ministry**: The Ministry of Civil Aviation (MoCA).

- **Implementing Agency**: The Airports Authority of India (AAI) serves as the nodal implementing agency. Safety and technical standards are regulated by the Directorate General of Civil Aviation (DGCA).
- **Nature of Scheme**: It operates as a **Central Sector Scheme** funded entirely by the Central Government and dedicated aviation levies.
- **Classification**: It is a **Flagship Scheme** aimed at democratising Indian aviation and resolving urban gridlocks.

Aims and Objectives

- **Decongest Metros**: To slash intra-city commute times in heavily congested areas like Delhi-NCR, Mumbai, and Bengaluru.
- **Enhance Last-Mile Connectivity**: To provide rapid air transport to unserved, remote, and topographically challenging terrains.
- **Promote Green Aviation**: To phase in zero-emission, low-noise eVTOL technology into standard public transit.
- **Boost Economic Corridors**: To facilitate swift movement of business professionals and medical emergencies.

Funding Mechanism

- **Viability Gap Funding (VGF)**: Funded through the regional connectivity fund, backed by a small levy on major domestic commercial flights.
- **Budgetary Outlay**: The Union Budget allocated **₹550 crore** specifically for regional connectivity infrastructure.
- **Private Capital**: Major private investments power the eVTOL rollout, notably a $1 billion partnership between InterGlobe Enterprises and Archer Aviation.

Key Features

- **Advanced Fleet**: Deployment of four-passenger electric eVTOL models like Archer's "Midnight" and indigenously built prototypes like the ePlane Company's "
E200X
".
- **Time Efficiency**: Drastically shrinks a 90-minute road journey (e.g., Connaught Place to Gurugram) to just 7 minutes.
- **Vertiports**: Operates from specialized urban micro-airports equipped with rapid-charging systems.

- **Predictable Pricing**: Tailored to charge fixed, non-dynamic competitive rates roughly 1.5 times premium ride-hailing cabs.

Current Status & Achievements (2026 Update)

- **Policy Progress**: MoCA officially circulated the comprehensive **Draft UAM National Policy Framework** in April 2026 to govern commercial routes.
- **Infrastructure Blueprints**: AAI finalized safety and design blueprints for initial vertiport clusters in Delhi, Mumbai, and Bengaluru.
- **Trial Commencements**: Official route testing and operational trials are set to begin across major metro hubs by mid-2026.
- **Indigenous Milestones**: The ePlane Company's "E200X" completed critical design approvals and structural ground validations.

Criticisms and Pitfalls

- **Equity and Prioritisation**: Critics from think tanks like the Observer Research Foundation (ORF) argue that spending capital on elite air taxis ignores the funding deficits plaguing mass public bus and metro systems.
- **Prohibitive Cost**: Despite promises of affordable rates, initial infrastructural costs may limit the service to upper-class commuters.
- **Regulatory Lag**: Modifying type certifications for unconventional aircraft from global agencies like the FAA or EASA to meet Indian criteria risks delaying the commercial timeline toward 2028.
- **Urban Governance Deficit**: Fragmented coordination between the DGCA, state governments, and financially weak urban local bodies poses a roadblock to building secure flight corridors

36. Shipbuilding Financial Assistance Policy: Budget 2025-26 included new support for shipbuilding clusters and a **Maritime Development Fund** to boost the blue economy.

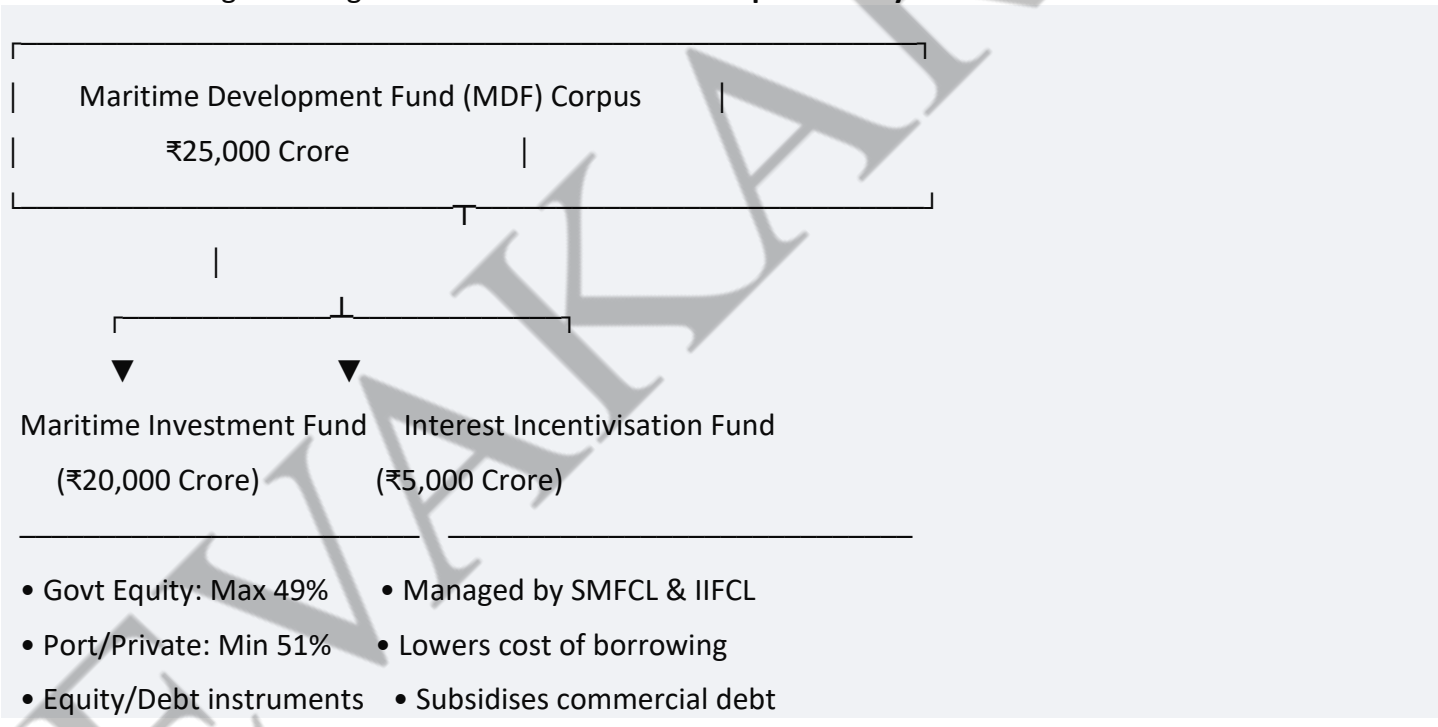
The **Maritime Development Fund (MDF)** and the **Shipbuilding Development Scheme (Shipbuilding Clusters initiative)**, introduced in the Union Budget 2025–26, serve as a **Central Sector Scheme** designed to overhaul India's domestic shipping, tonnage capacity, and heavy maritime engineering ecosystem. Operated under a flagship policy framework, the initiative falls under the administrative control of the **Ministry of Ports, Shipping and Waterways (MoPSW)**.

Core Architecture & Governance

- **Ministry:** Ministry of Ports, Shipping and Waterways (MoPSW).
- **Implementing & Nodal Agencies: Sagarmala Finance Corporation Limited (SMFCL)** acts as the apex nodal agency. For specific portfolio executions, the **National Bank for Financing Infrastructure and Development (NaBFID)** and **India Infrastructure Finance Co Ltd (IIFCL)** act as the fund managers.
- **Scheme Categorisation:** It is a **Central Sector Scheme** (funded directly by the Central Government and institutional partners, without state-level cost-sharing allocations).
- **Strategic Status:** This is a **Flagship Policy Initiative** mapped directly to the long-term targets of the Maritime India Vision 2030 and *Viksit Bharat 2047*.

Aims, Objectives & Financial Mechanisms

The strategic overarching target is to expand India's domestic shipbuilding footprint and boost Indian-flagged vessels' share in global cargo volume **from less than 3% up to 20% by 2047**.



1. Funding Mechanism & Capital Structure

- **Total Corpus Value: ₹25,000 crore** deployed over an operational horizon of 10 years.
- **Equity Splitting:** The Government of India contributes a maximum of **49%** in equity. The remaining **51%** balance is cross-mobilized from Major Port Authorities, public sector enterprises, commercial financial institutions, and private investors.
- **Dual-Component Breakdown:**
  - **Maritime Investment Fund (MIF):** ₹20,000 crore dedicated to direct equity participation, vessel acquisition financing, and heavy asset deployments.

- **Interest Incentivisation Fund (IIF):** ₹5,000 crore earmarked to subsidise commercial debt costs and lower long-term interest burdens for local shipyards.

2. Key Features of Shipbuilding Clusters

- **Trunk Infrastructure Capital Support:** Direct financial backing for massive greenfield and brownfield site preparations, including breakwater construction and deep capital dredging.
- **Fiscal Incentives:** Provision of a **10-year rent holiday** on industrial land allocations alongside dedicated funding for localized utilities, roads, and sewage networks.
- **Yard Modernisation:** A targeted allocation of **₹6,100 crore** explicitly to automate, digitize, and upscale existing domestic shipyards to improve turnaround efficiency.
- **Circular Economy Integration:** Introduction of **Shipbreaking Credit Notes** (integrated with the revamped Shipbuilding Financial Assistance Policy 2.0) to incentivize sustainable vessel recycling within Indian yards.
- **Asset Classification:** Inclusion of large vessels above specified sizes into the *Infrastructure Harmonized Master List (HML)*, allowing maritime projects access to low-cost, long-term infrastructure lending parameters.

Update as of 2026: Achievements & Implementation Status

Following its announcement, the policy framework was solidified via a comprehensive **₹69,725-crore cabinet-approved maritime revival package**.

1. Budgetary Allocations & Milestones

- **Fiscal Year 2026–27 Funding:** The Union Budget allocated **₹1,000 crore** as an active capital injection specifically for the MDF to jumpstart operational credit deployments.
- **Institutional Activation: Sagarmala Finance Corporation Limited (SMFCL)** officially commenced lending operations, establishing a borrowing threshold of ₹25,000 crore and targeting an active baseline lending book of ₹8,000 crore.
- **Ancillary Scheme Funding:** Budget 2026 designated **₹515 crore** for the active execution of the *Shipbuilding Financial Assistance Scheme (SBFAS)* and *National Shipbuilding Mission*, alongside **₹250 crore** for the *India-Shipbuilding Development Scheme (SbDS)*.

2. Tangible Achievements

- **Credit Line Executions:** Anchor financial tie-ups have been formalized, including an initial allocation of approximately **₹4,000 crore** to finance a major Greenfield Port project.

- **Syndicated Asset Management:** MoUs signed between SMFCL, NaBFID, and IIFCL successfully institutionalized the blended finance framework, activating access to cheap commercial credit for local vessel construction.

Industry Criticisms & Bottlenecks

Despite major financial commitments, economic analysts and maritime industry watchdogs highlight several structural challenges:

- **Pace of Private Capital Mobilization:** Critics point out that since the government's equity contribution is strictly capped at 49%, the fund's success relies heavily on attracting 51% in matching private/commercial investment. Private risk appetite for capital-intensive, long-gestation maritime projects remains hesitant.
- **Severe Global Market Lag:** India's domestic commercial fleet still accounts for roughly **2.6% of the global fleet volume**, dropping India from 17th to 19th in global ship ownership rankings. Critics argue that the current financial injections are too fragmented to immediately break the manufacturing monopolies held by China, South Korea, and Japan.
- **Compounding Structural Disadvantages:** While the scheme offers local financial assistance, it does not fully offset deep-rooted domestic ecosystem deficiencies, such as high local taxation, rigid labor regulatory frameworks, and costly domestic steel sourcing compared to international competitors.
- **Gestation Delays:** Setting up new shipbuilding mega-clusters requires extensive environmental clearances, local land acquisition, and complex infrastructure modifications. This creates execution lag before any commercial output hits the water

37. Port Connectivity Masterplan: MoRTH has identified over 100 projects to ensure seamless **last-mile road connectivity** to all 89 operational ports in India.

The **Port Connectivity Master Plan** operates as a critical component of India's **Comprehensive Port Connectivity Plan (CPCP)** under the **PM Gati Shakti National Master Plan**. It functions as a **flagship umbrella program** integrated directly into the **Sagarmala Programme** to overhaul India's maritime logistics network.

Core Institutional Framework

- **Governing Ministry:** Ministry of Ports, Shipping and Waterways (MoPSW).
- **Scheme Classification:** It is a **Central Sector Scheme**. The central government provides 100% financial assistance for targeted infrastructure gap projects.

- **Implementing Agencies:** Multiple bodies collaborate to execute individual projects. These include the Indian Port Rail & Ropeway Corporation Limited (IPRCL), National Highways Authority of India (NHAI), Ministry of Railways (MoR), Ministry of Road Transport and Highways (MoRTH), and respective State Maritime Boards.

Aims, Objectives, and Funding Mechanism

- **Aims & Objectives:** To bridge last-mile infrastructure gaps between national economic hubs and maritime gates. It intends to lower India's domestic logistics costs, optimize multi-modal freight transport, and upgrade EXIM trade competitiveness.
- **Funding Mechanism:** Fully financed via direct budget allocations from the central sector pool, Public-Private Partnerships (PPP), and equity structures involving Major Port Authorities.

Key Features

- **Multi-Modal Integration:** Syncs domestic consumption and production clusters with ports through a network of roads, railways, pipelines, and Multi-Modal Logistics Parks (MMLPs).
- **Cross-Ministerial Synchronization:** Uses the GIS-based PM Gati Shakti Digital Master Planning tool to map and resolve clearance bottlenecks simultaneously across line ministries.
- **Hinterland & Last-Mile Target:** Prioritizes heavy-haul rail networks and dedicated highway corridors directly linking port gates to inland container depots.

Performance Updates and Achievements (As of 2026)

Parameter	Performance & Milestones achieved as of 2026
Dedicated Projects	**294 projects** mapped explicitly under the Port Connectivity pillar, totaling an investment scale of **₹2.39 lakh crore**.
Execution Metrics	**106 projects** (valued at ₹65,061 crore) are completely operational. **70 projects** (worth ₹73,934 crore) are actively under construction.
Cargo Handling Volume	India's major ports achieved a historic high of **915.17 million tonnes (MT)** of cargo during the fiscal period.

Efficiency Gauges	Average vessel turnaround times at ports dramatically lowered to **49.5 hours** (down from 96 hours in 2014).
Inland Waterway Freight	Scaled significantly to hit **145.50 MTPA**, relieving pressure on traditional overland road lanes.

Criticisms and Challenges

- **Implementation Red Tape:** Projects face persistent delays and structural cost overruns, primarily due to land acquisition friction and local environmental clearance slowdowns.
- **Suboptimal Capacity Utilization:** Despite major funding outlays to expand berth structures and connecting links, several major ports continue to operate below their designated optimum handling capabilities.
- **Hinterland Gridlocks:** Last-mile rail and highway links frequently experience bottlenecking because matching capacity upgrades across adjacent city networks remain delayed.