

Update-Infrastructure

PM launches Gati Shakti- National Master Plan for Multi-modal Connectivity (13-10-2021)

PM GatiShakti National Master Plan (PMGS-NMP) was launched on 13th October 2021 for providing multimodal connectivity infrastructure to various economic zones.

Gati Shakti is a **digital platform** to bring various Ministries including Railways and Roadways together for integrated planning and coordinated implementation of infrastructure connectivity projects.

The multi-modal connectivity will provide integrated and seamless connectivity for movement of people, goods and services from one mode of transport to another. It will facilitate the last mile connectivity of infrastructure and also reduce travel time for people.

PM Gati Shakti is driven by **seven engines**, namely, Roads, Railways, Airports, Ports, Mass Transport, Waterways, and Logistics Infrastructure. All 7 engines will pull forward the economy in unison.

It will also include the infrastructure developed by the State Governments, as per the GatiShakti Master Plan. The focus will be on planning, financing including through innovative ways, use of technology and speedier implementation.

To ensure better decision-making and coordination among various Central Ministries/Departments and State Governments, a **three tier institutional arrangement** in the form of Empowered Group of Secretaries (EGoS), Network Planning Group (NPG) and Technical Support Unit (TSU) has been created, both at Central and State levels.

EGOS will be headed by Cabinet Secretary.

Network Planning Group (NPG) consisting of heads of Network Planning wing of respective infrastructure ministries will assist the EGOS. NPG evaluates the projects from the perspective of integrated planning based on the PM GatiShakti principles.

Technical Support Unit (TSU) is approved for providing the required competencies. **TSU** shall have **domain experts** from various infrastructure sectors and **Subject Matter Experts (SMEs)**

CISF 2022

What is 'PM Gati Shakti' often seen in the news?

- (a) **An integrated digital platform for infrastructure development** (b) A poverty alleviation programme of the Union Government
(c) A holistic welfare programme meant for migrant labour (d) A master plan to develop the country's defence capabilities

Industrial Corridors in India

Government of India is developing various Industrial Corridor Projects as part of National Industrial Corridor Programme which is aimed at development of greenfield industrial cities in India in order to compete with the best manufacturing and investment destinations in the world.

The Objective of development of industrial corridors is to expand the industrial output, increasing employment opportunities, provide better living and social facilities for the new and growing workforce by way of **providing plug n play infrastructure** at the plot level for industries.

National Industrial Corridor Development Corporation Limited (NICDC) has been constituted under the administrative control of Department for Promotion of Industry and Internal Trade (DPIIT) for coordinated and unified development of all the industrial corridors in the country.

Delhi Mumbai Industrial Corridor (DMIC) is the first Industrial Corridor which is being implemented in the country wherein substantial progress has been made.

Govt of India has accorded approval for development of 11 Industrial corridors (32 projects) in four Phases (Loan from ADB)

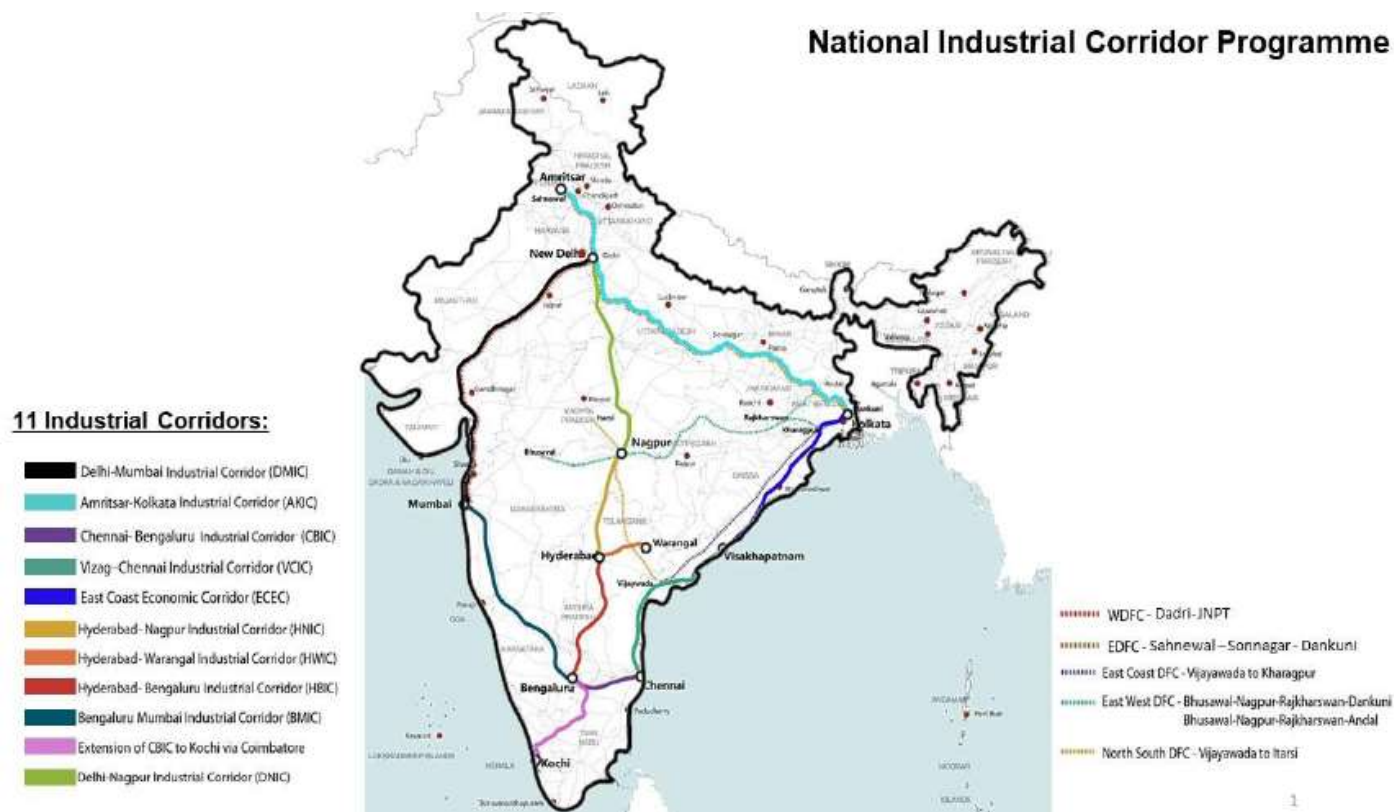
i. Delhi Mumbai Industrial Corridor (DMIC); (First Corridor) (The project covers the States of Uttar Pradesh, Haryana, Rajasthan, Madhya Pradesh, Gujarat and Maharashtra along the Western Dedicated Freight Corridor (DFC) of the railways. End terminals at Dadri in the Delhi NCR and Jawaharlal Nehru Port (JNPT) near Mumbai. **Area- Rajasthan 39.16%, Gujarat 22.15%, Maharastra 15.29%, MP 10.27%, UP 7.02%, Haryana 5.71%**)

ii. Chennai Bengaluru Industrial Corridor (CBIC); (Tamil Nadu, Karnataka, Andhra Pradesh)

- iii. **Amritsar Kolkata Industrial Corridor (AKIC)**; (seven States of Punjab, Haryana, Uttar Pradesh, Uttarakhand, Bihar, Jharkhand and West Bengal.)
- iv. **Vizag- Chennai Industrial Corridor (VCIC)** (Andhra Pradesh and Tamil Nadu) (VCIC comprises the first phase of East Coast Economic Corridor (ECEC), **India's first coastal corridor**, Funding ADB);
- v. **Bengaluru Mumbai Industrial Corridor (BMIC)**; (Karnataka and Maharashtra)
- vi. Extension of CBIC to Kochi via Coimbatore;
- vii. Hyderabad Nagpur Industrial Corridor (HNIC);
- viii. Hyderabad Warangal Industrial Corridor (HWIC);
- ix. Hyderabad Bengaluru Industrial Corridor (HBIC);
- x. Odisha Economic Corridor (OEC); (developed as part of East Coast Economic Corridor)
- xi. Delhi Nagpur Industrial Corridor (DNIC).

Freight Corridors as transportation backbone

While developing the Delhi Mumbai Industrial Corridor (DMIC) project, Western Dedicated Freight Corridor has been considered as the transportation backbone while Eastern DFC has been considered as the backbone for Amritsar Kolkata Industrial Corridor (AKIC) project.



CAPF-2016

Which one of the following is not an industrial corridor as per the policy initiatives ?

- (a) Amritsar –Kolkata (b) Delhi – Mumbai (c) **Kolkata – Guwahati** (d) Chennai – Bengaluru

NDA-2013

Delhi-Mumbai industrial corridor connects the political and business capital of India. Arrange the states from highest to lowest in terms of the length of corridor passing through them.

- (a) Maharashtra- Gujarat-Rajasthan-NCR of Delhi
 (b) NCR of Delhi-UP- Rajasthan- Maharashtra
 (c) **Rajasthan- Gujarat –Maharashtra- NCR of Delhi**
 (d) Maharashtra- Rajasthan –UP-NCR of Delhi

East Coast Economic Corridor (ECEC) (India's First coastal corridor)

Length	2500 KM from Kolkata (in West Bengal) to Kanyakumari (in Tamil Nadu). Pass through Odisha and Andhra Pradesh
Benefit	It will spur development on India's eastern coast and create seamless trade links with other parts of South and Southeast Asia
Funding	Loan from Asian Development Bank
Visakhapatnam (Vizag)- Chennai Industrial Corridor (VCIC)	It is a First Phase of ECEC The Visakhapatnam-Chennai Industrial Corridor section of the East Coast Economic Corridor will mark the first industrial corridor developed along India's coast.

Dedicated Freight Corridors in Indian Railways

Ministry of Railways has taken up construction of two Dedicated Freight Corridors (DFC).

1. **Western Dedicated Freight Corridor** (1506 km long) connecting Jawaharlal Nehru Port (JNPT) in Mumbai to Dadri in Uttar Pradesh. (Funding Japan International Cooperation Agency)

Western Corridor will pass through **5 states** namely, Maharashtra (178 km), Gujarat (565 km), Rajasthan (**567 km**), Haryana (177 km) and UP (19 km).

2. **Eastern Dedicated Freight Corridor** (1875 km long) starting from Sahnewal near Ludhiana (Punjab) to terminate at Dankuni in West Bengal. (Partial Funding World bank)
Ludhiana to Sonnagar (Bihar) (1337 Km) by Indian railway and Sonnagar to Dankuni section (538 km) in PPP mode.

Eastern Corridor will pass through **6 states** namely, Punjab (88 km), Haryana (72 km), UP (**1078 km**), Bihar (239 km), Jharkhand (195 km) and West Bengal (203 km).

The Western DFC is proposed to **join Eastern Corridor at Dadri**.

Ministry of Railways set up Dedicated Freight Corridor Corporation of India Limited (DFCCIL) as a special purpose vehicle to undertake planning, development, mobilization of financial resources, construction, maintenance and operation of Dedicated Freight Corridors.

1337 Km on EDFC and 1397 Km on WDFC has been completed. (April, 2024)

Need for Dedicated freight corridors

The Indian Railways' Golden Quadrilateral linking the four metropolitan cities of Delhi, Mumbai, Chennai and Howrah (Delhi – Mumbai, Delhi – Howrah, Howrah – Chennai, Chennai – Mumbai), and its two diagonals (Delhi-Chennai and Mumbai-Howrah), adding up to a total route length of 10,122 km comprising of 16% of the route carried more than 52% of the passenger traffic and 58% of revenue earning freight traffic of IR.

This trunk route is highly saturated with line capacity utilization varying between 115% to 150%. Over the year, **Railways lost the share in freight** traffic from 88% in 1950-51 to 26% in 2021-22. Not only this, the National highways along these corridors comprising 0.5% of the road network carried almost 40% of the road freight.

The surging domestic economy, booming infrastructure construction and growing international trade led to the conception of the Dedicated Freight Corridors along the Eastern and Western arms of Golden Quadrilateral.

In addition, Ministry of Railways has decided to undertake Detailed Project Reports (DPR) for **three new Dedicated Freight corridors** on the following routes :

1. **East Coast corridor**- from Kharagpur (West Bengal) to Vijayawada (Andhra Pradesh) via Odisha. (1115 km)
2. **East-West corridor** –
 - a. Sub-corridor-I from Palghar (Maharashtra) to Dankuni (West Bengal) (2073 KM)
 - b. Sub-corridor-II from Rajkharswan (Jharkhand) to Andal (West Bengal) (195 KM)
3. **North – South sub corridor** – from Vijayawada (AP) to Itarsi (MP) (975 KM)

Defence Industrial Corridors

Government of India has set up two Defence Industrial Corridors (DICs) in order to attract total investment worth Rs 20,000 crore by the year 2024-25 for defence industries, develop domestic supply chain and strengthen defence manufacturing ecosystem in the country.

In **Uttar Pradesh** Defence Industrial Corridor (UPDIC), there are **06 nodes namely**, Aligarh, Agra, Jhansi, Kanpur, Chitrakoot & Lucknow, and in **Tamil Nadu** Defence Industrial Corridor (TNDIC) **05 nodes namely**, Chennai, Hosur, Coimbatore, Salem & Tiruchirappalli.

Uttar Pradesh Expressways Industrial Development Authority (UPEIDA) is the nodal agency for UPDIC and Tamil Nadu Industrial Development Corporation (TIDCO) is the nodal agency for TNDIC.

Both the States have promulgated their respective Aerospace & Defence Policy to attract investments in DICs.

High Speed Rail corridors (Bullet Train)

At present, the Mumbai-Ahmedabad High Speed Rail (MAHSR) Project is the **only sanctioned** High Speed Rail project in the country which is being implemented with technical and financial assistance from Government of Japan.

Further, the Survey and preparation of Detailed Project Report (DPR) for the following seven (7) High Speed Rail (HSR) corridors has been undertaken:

- (i) Delhi - Varanasi
- (ii) Delhi -Ahmedabad
- (iii) Mumbai-Nagpur
- (iv) Mumbai -Hyderabad
- (v) Chennai - Bangalore - Mysore
- (vi) Delhi - Chandigarh - Amritsar
- (vii) Varanasi – Howrah

National High-Speed Rail Corporation Limited (NHSRCL) was incorporated on 12th February 2016 under the Companies Act, 2013 with an object to finance, construct, maintain and manage the High Speed Rail Corridor in India.

The Company has been modelled as 'Special Purpose Vehicle' in the joint sector with equity participation by Central Government through Ministry of Railways and two State Governments viz. Government of Gujarat and Government of Maharashtra.

Golden Quadrilateral National Highway Project Connecting Delhi, Mumbai, Chennai & Kolkata

Segment	Total Length
Delhi-Kolkata	1,453 km
Chennai-Mumbai	1,290 km
Kolkata-Chennai	1,684 km
Mumbai-Delhi	1,419 km

Golden Quadrilateral passes through 13 states: Andhra Pradesh – 1,014 km (**Highest Length**)

CAPF-2012

The Golden Quadrilateral of India connects which of the following places?

- (a) Srinagar—Porbandar —Kanyakumari—Silchar
- (b) Delhi—Mumbai —Chennai—Kolkata**
- (c) Delhi—Mumbai —Kanyakumari—Kolkata
- (d) Jammu—Ahmedabad —Chennai—Kolkata

NDA Exam 2017

Which one of the following sections of the Golden Quadrilateral Highway in India is the longest in terms of route distance?

- (a) Delhi – Kolkata
- (b) Kolkata – Chennai**
- (c) Chennai – Mumbai
- (d) Mumbai – Delhi

North–South and East–West Corridors National Highway

North-South corridor	Connects Srinagar (J&K) to Kanyakumari (Tamilnadu) (<i>length 4076 km</i>)
East-West corridor	Connects Silchar (Assam) to Porbandar (Gujrat) (<i>Length 3640 km</i>)

North–South and East–West Corridors **meet at Jhansi (UP)**

CISF/LDC 2017

Which two of the following extreme location are connected by the East-West Corridor In India ?

- (a) Silchar and Porbandar**
- (b) Mumbai and Nagpur
- (c) Mumbai and Kolkata
- (d) Nagpur and Siliguri

CISF 2020

The East-West Corridor National Highway connects which of the following?

- (a) Silchar to Porbandar**
- (b) Jorhat to Jaisalmer
- (c) Agartala to Ahmedabad
- (d) Itanagar to Mapusa

Sagarmala programme

Sagarmala programme is the flagship programme of the Ministry of Shipping to **promote port-led development** in the country through harnessing India's 7,500 km long coastline, 14,500 km of potentially navigable waterways and strategic location on key international maritime trade routes.

The main vision of the Sagarmala Programme is to reduce logistics cost for EXIM and domestic trade with minimal infrastructure investment.

Sagarmala program was launched in March 2015 with the objectives to achieve port modernization & new port development, port connectivity enhancement, port-led industrialization and coastal community development.

National Waterways

Development of NW	The Government is working to develop inland waterways as an alternative mode of transport in the country, which is cleaner and cheaper than both road and rail transport. 111 Inland Waterways (including 5 existing and 106 additional Waterways) spread over 24 states have been declared as National Waterways (NWs) vide National Waterways Act, 2016.
NW-1	The government is developing NW-1 (Ganga-Bhagirathi-Hooghly river system) under Jal Marg Vikas Project (JMVP) from Haldia to Allahabad (1620 Km) with the technical and financial assistance of the World Bank .
3 multi-modal terminals	Varanasi (UP) Sahibganj (Jharkhand), and Haldia (West Bengal).
States	NW-1 will pass through Uttar Pradesh, Bihar, Jharkhand and West Bengal , serving the major cities of Allahabad, Varanasi, Ghazipur, Bhagalpur, Patna, Howrah, Haldia and Kolkata, and their industrial hinterland including several industries located in the Ganga basin.
Varanasi Multi-Modal Terminal	Prime Minister Narendra Modi inaugurated India's first Multi-Modal Terminal in Varanasi on 13-11-2018 and also received India's first container movement on an inland waterway (post independence) that sailed from Kolkata's Haldia port carrying cargo belonging to PEPSICO (India).
NW-2	Brahmaputra River (Dhubri - Sadiya) 891KM Assam
NW-3	West Coast Canal (Kottapuram - Kollam) 205KM Kerala West Coast Canal (Kottapuram - Kozhikode) 170 KM Kerala
IWAI	Inland Waterways Authority of India (IWAI) a Statutory Body established through IWAI Act, 1985 for development and regulation of inland waterways for shipping and navigation. Work under Ministry of Ports, Shipping and Waterways. HQ Noida

Viability Gap Funding by Govt. in Infrastructure Projects

Infrastructure projects, often have high social but an unacceptable commercial rate of return. These are generally characterised by substantial investments, long gestation periods, fixed returns, etc. that make it essential that Government supports infrastructure financing, through appropriate financial instruments and incentives.

The Guidelines for Financial Support to PPPs in Infrastructure under the Viability Gap Funding scheme were notified by Ministry of Finance, Department of Economic Affairs dated January 23, 2006

Viability Gap Funding (VGF) means financial support in the form of grants, one time or deferred, to infrastructure projects undertaken through public private partnerships with a view to make them commercially viable. VGF to be provided shall be in the form of a capital grant at the stage of project construction.

The amount of VGF shall be equivalent to the **lowest bid for capital subsidy**, but subject to a maximum of **20%** of the total project cost. In case the sponsoring Ministry/State Government/statutory entity proposes to provide any assistance over and above the said VGF, it shall be restricted to a further **20%** of the total project cost.

Salient features of the models being adopted for construction of National Highways

1. Public Funded Projects: In such types of model, 100% funding is provided by Government. Different types of Public Funded Models are as under:

(i) Item Rate: Detailed design, specifications & estimates are provided by the employer and contractor is paid for the quantities executed as per item wise rates quoted in the Bid. Cost/Risk of any variation in quantity is borne by the employer.

(ii) Engineering, Procurement and Construction (EPC): In such types of models, full freedom to plan, design and construction is given to the contractor and core requirements of design, construction, operation and maintenance are specified in schedules. Scope for adopting best practices and innovation to optimize the efficiency and economy is available in such types of model. Payments are linked to specified stages of construction. The Contract Price is subject to adjustment on account of variation in the cost and change in scope ordered by employer.

2. Public Private Partnership Projects (PPP): Different types of PPP Models are as under:

(i) BOT (Toll): Private developers/ operators, who invest in toll-able highway projects, are entitled to collect and retain toll revenue for the tenure of the project concession period. Responsibility for design and development of the project is vested with the Concessionaire under this mode. He is also responsible for Operation and Maintenance (O&M) of the project for the entire concession period after it is developed and put to commercial operation. The tolls are prescribed by the authority on per vehicle per km basis for different types of vehicles.

(ii) BOT (Annuity): As in case of BOT (Toll) Projects, responsibility for design, development and O&M of the Project Section for the entire Concession Period is vested with the Concessionaire for the Project. Concessionaire is given Annuity Payments during the O&M period as per provisions of the Concession Agreement. Tolling rights during O&M period vest with the employer after declaration of Commercial Operation of the developed section.

(iii) Hybrid Annuity Model (HAM): Under this model, **40% of the Project Cost** is paid by the Government/ Executing Agency as Construction Support/ Grant to the private developer and the balance 60% is to be arranged by the successful bidder during the construction period. The Concessionaire is paid back the amount of 60% along with interest and Operation & Maintenance (O&M) payment in the form of annuities during operation period. While the concessionaire is responsible for the Operation & Maintenance during the concession period. The traffic risk is taken by the project Executing Agency/ Employer. Tolling rights during the O&M period are vested with the employer after declaration of commercial operation of the developed section.

Bharatmala Pariyojana

India has about 63.73 lakh km of road network, which is the second largest in the world.

Bharatmala Pariyojana is a new umbrella program for the **highways sector** that focuses on **optimizing efficiency** of freight and passenger movement across the country by bridging critical infrastructure gaps through effective interventions like development of Economic Corridors, Inter Corridors and Feeder Routes, National Corridor Efficiency Improvement, Border and International connectivity roads, Coastal and Port connectivity roads and Green-field expressways.

Government of India had approved Bharatmala Pariyojana Phase-I in October, 2017 with an aggregate length of about 34,800 km at an estimated outlay of Rs. 5,35,000 crores.

As a part of Bharatmala Pariyojana, India's largest expressway, i.e., 1,386 km long Delhi Mumbai Expressway, is being developed.

NDA 2018

Bharatmala Project is related to

- (a) **Improving road connectivity** (b) Interlinking ports and railways
(c) Interlinking of rivers (d) Interlinking major cities with gas pipelines

NDA 2021

Bharatmala Pariyojana is related to

- (a) interlinking of Northern and Southern Indian rivers in a garland shape. (b) **networks of National Highways in India.**
(c) interlinking of all cities of India through Railways . (d) interlinking of all industrial regions of India through pipelines.

NDA (1) 2023

Which of the following schemers is/are included under Bharatmala Pariyojana ?

1. Develop the road connectivity to border areas

2. Development of coastal roads
 3. Improvement in the efficiency of National Corridors
- Select the correct answer using the code given below:
(a) 1 only (b) 3 only (c) 2 and 3 only (d) **1,2 and 3**

India's First International Multimodal Logistics Park at Jogighopa ,Assam

The park is being developed under the ambitious Bharatmala Pariyojana of the Government

The park will be connected to road, rail, air and waterways. This is being developed in 317-acre land along the **Brahmaputra**.

The MMLP will have all the facilities like, warehouse, railway siding, cold storage, custom clearance house, yard facility, workshops, petrol pumps, truck parking, administrative building, boarding lodging, eating joints, water treatment plant, etc.

Parvatmala: National Ropeways Development Programme

Developing an efficient transport network is a big challenge in hilly areas. The rail and air transport networks are limited in these areas, while the development of road network has technical challenges. In this backdrop, Ropeways have emerged as a convenient and safe alternate transport mode.

Government has decided to develop Ropeways in hilly areas of the country. Ministry of Road Transport and Highways (MORT&H) has so far been responsible for development of Highways and regulating the road transport sector across the country. However, in February 2021, the Government of India (Allocation of Business) Rules 1961 was amended, which enables the Ministry to also look after the development of Ropeways and Alternate Mobility Solutions.

National Highways Logistics Management Limited (NHLML), 100% owned SPV of NHAI has been mandated by MoRT&H for implementation of Ropeways in the Country.

Union Finance Minister Smt Nirmala Sitharaman, while presenting **Union Budget for 2022-23 announced** National Ropeways Development Programme – “Parvatmala” – which will be taken up on PPP mode.

It will be a preferred, ecologically sustainable alternative in place of conventional roads in difficult hilly areas,

The idea is to improve connectivity and convenience for commuters, besides promoting tourism.

This **may also cover congested urban areas**, where conventional mass transit system is not feasible.