

Ministry of Road Transport & Highways Government of India

BharatMala: Optimizing the efficiency of movement

Move towards New India Ensuring Ease of Living Importance of roads for a nation, is the same as the importance of arteries and veins in the human body

> - Shri Narendra Modi Prime Minister



Bharatmala will be a major driver for economic growth in the country, and help realize Prime Minister Modi's vision of a "New India"

> - Shri Nitin Gadkari, Minister RT&H



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INTRODUCTION

India has about 62.16 lakh km of road network, which is the second largest in the world in terms of length. National Highways (NHs) constitute about 2% of the total road network, but carry about 40% of the total road traffic

The National Highways Development Project (NHDP) had reached a certain level of maturity. It was important to re-define road development and have a macro approach while planning expansion of the national highways network. Earlier, the rationale for highway construction was point to point connectivity; highways development was not planned with an economic perspective.

It was, therefore, required that the Origin and Destination of vehicular traffic, particularly of freight, be the basis of construction for the bigger i.e. 4-laning/6-laning National Highways (NHs).

Hence it was proposed to launch a new umbrella program with the primary focus of optimizing the efficiency of the movement of goods and people across the country.



Karnataka Border to Kundapur, Goa

CONSULTATION IN FINALIZING REFORMS

Consultations in finalizing reforms

All Implementing agencies All State Governments Key 1A Expert agencies, professional bodies and investors Kev Ministries & Departments - Finance Ministry (DEA, 7 Dept. of Expenditure, Dept. of Financial Services), Niti Aayog 10 +0 International Benchmarks \bigcirc 100 +**Discussions and Brainstorming sessions**

"The sector has been witnessing high construction rates over the last few years. A host of policy initiatives undertaken by the government in the recent past covering aspects like expeditious land acquisition, solving operational issues, revival of languishing projects and time bound resolution of disputes in an affordable manner have gone a long way in ensuring an enabling environment" Davindar Sandhu (Partner, KPMG)





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GAPS IN HIGHWAY INFRASTRUCTURE

The Bharatmala Pariyojana program envisages a corridor approach in place of the existing packagebased approach which had, in many cases, resulted in skewed development. For instance, in areas of high traffic, even upto 30,000 Passenger Carrying Units (PCUs), there were National Highway stretches of single and even intermediate lane. Naturally, these become an impediment to seamless freight and passenger movement.

Inadequacy in Optimization of National Highway network

Road network has to be optimally designed to improve logistics efficiency and promote economic activity. Due to **resource constraints** and **lack of a national plan,** apart from Golden Quadrilateral and North-South-East-West Corridor¹, optimization of road network was inadequate.

Additionally, **connectivity of major corridors and ports with hinterland** was not planned in an integrated manner.

Presence of Congestion Points

Multiple points of local congestion were present even **on** already **developed corridors**, driven by the interaction of the **local city traffic** with the **highway traffic**, leading to drop in **vehicular speed**, **higher accidents on highways**.

Lack of accident response infrastructure

There was a need to **proactively identify areas** on national highways that are prone to accidents and **swiftly design and implement interventions.**

1. Under National Highway Development Project (NHDP) Phase 1 and Phase 2



Kadapa-Kurnool Section of NH-40, Andhra Pradesh

VISION FOR BHARATMALA PARIYOJANA

The umbrella program of Bharatmala focused on **enhanced effectiveness of already built infrastructure, multi-modal integration**, bridging **infrastructure gaps** for seamless movement and integrating **National and Economic Corridors.** The program was conceptualized to attain optimal resource allocation for a holistic highway development/improvement initiative.

At the time of conceptualization of Bharatmala Pariyojana, around 300 districts had NH connectivity. The bridging of critical infrastructure gaps in existing highway network would enhance safe and seamless movement of traffic, and in turn have a positive impact on the Logistic Performance Index (LPI) of the country.

To this effect, there are six key features of the program:

- **Economic Corridors:** Integrating the economic corridors facilitates larger connectedness between economically important production and consumption centers.
- Inter-corridor and Feeder routes: Inter-corridor connectivity would ensure first mile and last mile connectivity.
- **National Corridor Efficiency Improvement:** Through this, the greater actionable goal is to undertake lane expansion and decongestion of existing National Corridors.
- **Border and International connectivity Roads:** Better border road infrastructure would ensure greater maneuverability, while also boosting trade with neighboring countries.
- **Coastal and Port connectivity roads:** Port-led economic development is further boosted through connectivity to coastal areas, encouraging both, tourism and industrial development
- **Green-field Expressways:** Expressways have higher traffic configuration and choke points would benefit from green-field expressways.



Inaugration of Atal Tunnel, Himachal Pradesh

FEATURES OF THE REFORM

Corridor Based Approach

The objective of the Bharatmala Pariyojana program is to optimize the efficiency of freight and passenger movement across the country by bridging critical infrastructure gaps through **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.**

Identification of the project stretches under the components of the proposed program is based on detailed Origin-Destination (O-D) study, freight flow projections and verification of the identified infrastructure gaps through geo-mapping.

Construction of a total length of about 24,800 kms is being taken up under Phase-I of Bharatmala Pariyojana. In addition, Phase-I would also include about 10,000 kms of residual works of National Highway Development Project (NHDP).

Bharatmala Pariyojana was conceptualized as an umbrella program with a corridor-based approach:

- Origin-Destination study based on freight movement across 600 districts
- Technology-based automated traffic surveys over 1,500+ points
- Satellite mapping of corridors to identify upgradation requirements

Decongestion of Highways

- **191 congestion points** were identified across key cities on the National Highway corridor network
- Multiple interventions were identified for resolution of congestion points
 - 29 ring roads addressing 44 Congestion Points
 - 54 Bypasses addressing 56 Congestion Points
 - 76 Lane Expansions and structures addressing 91 Congestion Points

Resolution of Blackspots

Road safety audits were conducted for **32,971 km** till **FY20** and an additional length of **40,000 km** is targeted till **FY24**. Consequently, **5785** blackspots were identified for removal and rectification as a permanent measure to reduce road accidents



Interchange at Akshardham Junction, Delhi-Meerut Expressway, Delhi

SYSTEMATIC INTERVENTIONS FOR GREATER IMPACT _____





Inaugration of bridge over Dhola-Sadiya Ghat, Assam

BEFORE AND AFTER

Bharatmala Pariyojana shall deliver substantial Improvements in the Highway Network



Sadar Flyover Nagpur, Maharashtra

PUBLIC DISCOURSE ON BHARATMALA PARIYOJNA

Bharatmala Pariyojana in the news

Cabinet approves investment proposal for umbrella highway sector programme Bharatmala Pariyojana

By: FE Online February 5, 2018 5:52 PM

The Cabinet has accorded approval to the investment proposal for the umbrella highway sector programme Bharatmala Pariyojana (BMP) Phase I for development/upgradation of 34,800 km of National Highways (NHs) with an outlay of Rs.5,35,000 crore for over a five year period i.e. from 2017-18 to 2021-22.



mint

Bharatmala Phase-1 to generate 14.2 crore man-days of employment

1 min read . Updated: 08 Jul 2019, 07:53 PM IST

PTI

- A total of 225 projects, having an aggregate length of about 9,613 km, have been appraised and approved under Bharatmala Pariyojana Phase-I so far
- The project has been approved at an estimated cost of ₹5.35 lakh crore

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THE ECONOMIC TIMES | News

English Edition - | 21 December, 2020, 02:45 PM IST | E-Paper

Bharatmala Pariyojna sees construction of 2,921 km highways, 322 projects awarded till August 2020

Synopsis

Of the 34,500 km of highways approved under Bharatmala Pariyojana, 10,000 km pertain to residual highway stretches under the National Highways Development Project (NHDP).



NEW DELHI: The government on Sunday said it has constructed 2,921 km of highways under the Bharatmala Pariyojna. The government envisages building 34,800 km of highways at a cost of about Rs 5.35 lakh crore under

QUARTZ INDIA

The Modi government wants to build over 83,000 km of roads -enough to go around the Earth twice



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SUCCESS IN NUMBERS

Key components of Bharatmala Pariyojana

Category	Total Length (Km)	BM Phase 1 (Km)	Award (till Jan'21)	Construction (till Jan'21)
Economic Corridors	26,160	9,000	3,688	903
Inter Corridors and Feeder Rotes	15,400	6,000	1,099	229
National Corridor Efficiency Improvement	13,049	5,000	1,859	608
Border Roads / Strategic Highways	5,198	2,000	1,110	890
Coastal & Port Connectivity roads	3,298	2,000	229	61
Expressways	1,837	800	1,440	346
Bharatmala Total	64,942	24,800	9,425	3,037
NHDP	-	5,588	4,796	1,615
Grand Total	-	30,388	14,221	4,652

Status of congestion points as of Feb 2021 (Number of Projects)



SUCCESS STORIES AND PROMINENT PROJECTS

Success stories & prominent projects

MoRTH has completed the development of six arterial corridors in the country viz., Golden Quadrilateral (4 corridors), North – South Corridor and East – West Corridor

In addition to the development of arterial corridors, MoRTH has completed marquee projects in the recent past, in record time with superior design to enable efficient passenger and freight movement on key corridors

- 1. Eastern Peripheral Expressway
- 2. Delhi Meerut Expressway
- 3. Narmada Bridge
- 4. Chambal Bridge
- 5. Chenani Nashri Tunnel
- 6. New Brahmaputra Bridge
- 7. Dhaula Sadia
- 8. Babatpur-Varanasi
- 9. Bridges across Dibang and Lohit rivers



Eastern Peripheral Expressway: Completed

Need of the Project/ Situation Before the Project	In the absence of Eastern Peripheral Expressway, the transit traffic bound to the states of UP, Haryana, Punjab, J&K and Uttarakhand passed through Delhi, thereby causing traffic congestion in the capital and pollution for the residents. Additionally, the congestion also led to reduced logistic efficiency for freight travelling through Delhi.
Record completion time	Completed in time of 500 working days against average of 910 days
Access Controlled	 Fully access controlled 6 lane Expressway with close tolling system. Restriction of overloaded vehicles by installing Weigh-in-Motion (WIMs) at all the entry points.
Electronic Tolling	 Toll plazas equipped with ETC This toll plaza will house ITS control centre of the complete EPE
Green	 First expressway in the country with solar power About 2.6 lakh trees planted on the Expressway Drip irrigation along the entire Expressway
Aesthetic	 40 no. fountains installed on the Expressway 36 no. of monuments on Expressway Digital Art Gallery below the iconic toll plaza
Impact of the Project	 EPE connects industrial hubs in Haryana (Sonepat and Faridabad cities) and Uttar Pradesh (Greater Noida and Ghaziabad) while also bypassing the traffic not bound for Delhi, thereby, decongesting the city It is estimated that Eastern Peripheral Expressway is diverting more than 50,000 trucks away from Delhi daily



Eastern Peripheral Expressway, UP and Haryana



Eastern Peripheral Expressway, UP and Haryana

Delhi-Meerut Expressway: Completed

Need of the Project/ Situation Before the Project	In the absence of Delhi-Meerut Expressway, the stretch was riddled with congestion, thereby leading to long travel times of 2.5 hours between Delhi and Meerut for passengers and freight
Length of Project Road	82 Km
Total Capital Cost	INR 8,346 Cr.
Other Salient Features	 As an extension to Advanced Traffic Management System, Multi-Lane Free Flow system, Automatic Number Plate Recognition based user fee collection system is being implemented on Delhi - Meerut Expressway The country's first pilot of the state-of-the-art system is likely to be completed in April'21
Impact of the Project	This project reduced travel time between the economic belt of Meerut and Delhi from 2.5 hours to 50 minutes and increased connectivity from Delhi to Muzaffarnagar and further to Roorkee and Saharanpur, for which Meerut serves as an intermediary city for transit

Major Bridges	1
Minor Bridges	2
Grade Separators/ Flyovers	5
Vehicular Underpasses	6
Pedestrian Underpass	1
Foot Over Bridges	4







Delhi Meerut Expressway, Delhi and UP

Narmada Bridge: Completed

Need of the Project/ Situation Before the Project	The crossing across Narmada river near Bharuch in Gujarat, was a major bottleneck across the busy and congested NH8 connecting Delhi and Mumbai. Due to increasing traffic between the two cities, there was a pressing need for an extra bridge to streamline the traffic across the highway.
Project Length	6.745 Km
Major Bridge	1.344 Km
Contract Amount	INR 379 Cr.
Interchanges / Flyovers	2
Culverts	2 box culverts
Traffic	80,000 to 1000,000
Construction Period	30 months
Other Salient Features	 Largest extra dosed span (144m) in India and first extra dosed bridge in Gujarat State of the Art, HTMS System, Variable Message Sign Boards, Median Plantation, Traffic Aid Post, Med¬ical Aid Post, Smart Card Swapping at the Toll Plaza and Theme Lighting on the main bridge
Impact of the Project	The project reduced congestion in the important Golden Quadrilateral corridor between Delhi and Mumbai





Bridge over river Narmada on NH-8 at Bharuch, Gujarat

Chambal Bridge: Completed

Need for the Project/ Situation before Project	Lack of Kota bypass was a huge concern for the traffic originating from the Golden Quadrilateral corridor connecting Delhi – Mumbai from Jaipur as well as traffic originating in Gujarat and headed towards Northern Madhya Pradesh and Uttar Pradesh
Length of the Project	1.1 Km (700-meter Cable Stayed Bridge)
Lane Status of the Project	6 Lane
Total Capital Cost	INR 310 Cr.
Completion Date	29.08.2017
Other Salient Features	Developed with no structures in Chambal river protecting National Gharial Sanctuary
Impact of the Project	The project reduced travel time in the Golden Quadrilateral corridor and reduced congestion in the city of Kota





Bridge over Chambal River, Kota, Rajasthan

Delhi-Mumbai Expressway: Ongoing

Need for the Project/ Situation before Project	The Golden Quadrilateral corridor of NH8 between Delhi and Mumbai has become one of the busiest corridors in the country, because of the significance of the two cities as well as the industrial belt across the states of Haryana, Rajasthan, Madhya Pradesh, Gujarat, and Maharashtra. Therefore, there is a need for improved infrastructure to realize the economic opportunities of this region.
Total length	1,350 Km
Configuration	8-lane with option to expand to 12-lane in future
Project cost (Est.)	INR 90,000 Cr.
Employment generation	50 Lakh man days
Other Salient Features	 Greenfield alignment to avoid habitation and optimize cost of land acquisition Complete access controlled with pay per use close tolling concept Wayside amenities and cargo facilities planned at every half hour
Impact of the Project	 Enhances connectivity between India's National Capital Delhi and Financial Capital Mumbai Increases connectivity of Delhi and Mumbai with emerging economic hubs of Ajmer, Ujjain, Kota, Kishangarh and Ratlam Expected to contribute ~INR 200,000 Cr. to India's GDP





12 hrs

Delhi Mumbai Expressway

Reduction in Distance & Travel Time between Delhi (DND) and Mumbai (Virar)

Distance Reduction Time Reduction (in km) (in hours) -120 1,370 24 1,250 12 Existing Delhi - Mumbai Delhi - Mumbai Existing alignment alignment Expressway Expressway along NH 48 along NH 48 Equivalent Scale Effort Required Equivalent to building Howrah More than 5 Lakh Tons of Steel Bridge 20 times will be required 30 to 35 LakhTons of Cement 150 times the amount of cement will be consumed used inStatue of Unity ~50 Crore Cubic Meters The Roman Colosseumcan earthworkneeds to be done filled40 times over 15+ Crore Tons of aggregate Deployment of 20,000 to 25,000 will be used dumpers and 5000 to 6000 other earth moving and 25 Lakh Tons of Bitumenwill construction equipment be consumed

Employment generation for 2500+ trained civil engineers during the construction phase

Chenani-Nashri Tunnel in the State of Jammu and Kashmir: Completed

Need for the Project/ Situation before Project	Lack of all-weather route connecting Jammu and Srinagar was a huge hurdle for transportation of people, essential goods and vehicles during the winter months
Length of the Project	10.89 Km
Lane Status of the Project	2 Lane
Total Capital Cost	INR 9,579 Cr.
Completion Date	8.03.2017
Other Salient Features	 Integrated Traffic Control System Electrical Fire Signalling System Video Surveillance System Tunnel Ventilation System Evacuative Broadcast System FM Rebroadcast System SOS call boxes at every 150 m
Impact of the Project	The project reduced the distance between Jammu and Srinagar on NH1 by 29 km, leading to a time saving of 1 hour 30 mins and fuel savings of approximately INR 27 Lakhs per day



Chenani Nashri Tunnel, Jammu and Kashmir

New Brahmaputra Bridge: Completed

Purpose of the Project/ Situation before Project	The earlier infrastructure, in the form of an existing double decker rail- cum- road bridge, was under immense pressure, leading to congestion and massive delays for passengers, particularly the patients visiting Guwahati for treatment
Length of the Project	4.702 Km
Total Project Cost	INR 392 Cr. (Final Project Cost)
Completion Date	30.04.2017
Impact of the Project	Greatly benefitted all the patients visiting Guwahati for treatment from all districts North of Brahmaputra

New Brahamaputra Bridge at Guwahati, Assam NH-27 (Old NH-31)



Zojila Tunnel: Ongoing

Zojila Tunnel will provide all-weather connectivity between Srinagar and Leh. It will generate employment and also boost the economy of the region. It will also be of great strategic importance.

-Shri Narendra Modi, Prime Minister

Asia's longest bi-directional tunnel		
Need for the Project/Situation before Project	The connectivity between Ladakh and Kashmir region is greatly hindered in winters due to heavy snowfall and snow accumulation on the Zojila pass	
Length of tunnel	14.15 Km	
Total length of tunnel & approach road	32.78 Km	
Awarded cost	INR 4,510 Cr.	
Reduction in travel time	3 hours 15 minutes	
Construction Period (Est.)	6 years (up to 2026)	
Altitude	11,578 feet	
Impact of the Project	Zojila Tunnel will provide all-weather connectivity between Srinagar and Leh, thereby catering to the strategic as well as civil requirements of the region	

Reduction in
travel time3.5 hrs15 mins



Zozilla Tunnel on Srinagar-Leh Highway, Ladakh



Dhaula- Sadia Bridge in Assam: Completed

Need of the Project/Situation Before the Project	There was no link between Dhaula on NH-37 in Assam and Roing on NH-52 in Arunachal Pradesh, leading to reliance on ferry crossing as a means for transportation
Length of Bridge	9.15 Km
Total cost	INR 2,056 Cr. (BOT)
Reduction in distance from Rupai to Meka	165 Km
Connectivity	24*7
Fuel savings	Rs. 10 lakh / day
Impact of the Project	 The project has bridged the infrastructural gap by providing direct connectivity between eastern Assam and Arunachal Pradesh The project has facilitated numerous hydro power projects coming up in the State of Arunachal Pradesh The stretch caters to the strategic requirement of the country and its borders

Reduction in travel time

6 hrs







Bridge over Dhaula-Sadiya Ghat, Assam

Babatpur- Varanasi in the State of Uttar Pradesh: Completed

Need of the Project/Situation Before the Project	The connectivity between the Airport (Babatpur) and Varanasi city was congested, with high amounts of traffic causing traffic jam and inconvenience to tourists
Length of the Project	17.25 Km
Cost	INR 812.59 Cr.
Reduction in Travel time from airport to city	45 minutes
Inauguration date	12.11.2018
Other Salient Features	 Topiaries and Jet Forming fountains at suitable locations. Median plantation with Date Palm, Royal Palm and Foxtail Palm trees
Impact of the Project	This project benefitted the Buddhist Pilgrims visiting Sarnath, because of improved connectivity to Varanasi Ring Road





Babatpur - Varanasi Highway, UP

Kosi Bridge- Bihar: Ongoing

Need of the Project/Situation Before the Project	This is a missing link between Bihpur (on NH-31) and Madhepura district because of which, passengers have to take a detour to reach the other side, in the absence of Kosi Bridge
Length of the Project	30 Km
Bridge length	6.93 Km
Sanctioned Cost	INR 1,478.40 Cr. (sanctioned)
Reduction in Distance travelled	60 Km (at the time of project conceptualization)
Likely completion	2024
Impact of the Project	The construction of this new Bridge will fill the existing 30 km long gap between Udakishanganj and Bihpur, which will provide through connectivity between Nepal/ North Bihar/ East-West Corridor (passing through NH- 57) and South Bihar/ Jharkhand/ Golden Quadrilateral (passing through NH -2), besides full utilization of National Highway Number-31



Project location map of bridge on River Kosi, Bihar

MG Setu- Bihar: Ongoing

Need of the Project/Situation Before the Project	The presence of only one other 4 lane bridge (Old MG Setu) has put immense pressure on existing infrastructure and has greatly inconvenienced passengers because of continuous traffic jam and delayed travel times to cross the Ganga bridge
Length of the Project	14.50 Km
Bridge length	5.634 Km
Sanction Cost	INR 2,926.42 Cr.
Likely completion	2024
Traffic	60,000 PCU
Impact of the Project	This new 4-lane bridge will provide for an arrangement of 8-lane movement of traffic by supporting existing old 4-lane MG Setu. This will greatly benefit passengers through faster mobility, comfort, and convenience along with safer travel and will also address congestion.



Project location map of MG Setu, Bihar

Vikramshila Bridge on NH-131B: Ongoing

Need of the Project/Situation Before the Project	There is an increasing need for a new bridge to meet the requirements of road traffic of 25,000 PCU, which puts immense pressure on existing Vikramshila Setu, which is only a 2 lane bridge and has undergone damage due to continuous plying of heavy loaded vehicles
Length of the Project	4.455 Km
Sanctioned Cost	INR 1,110.23 Cr.
Likely completion	2024
Impact of the Project	Construction of this bridge will facilitate the movement of minerals from Jharkhand and aggregates from Pakur Range to North Bihar smoothly, thereby supporting existing infrastructure and contributing to socio-economic progress for the region



Project location map of Vikramshila Setu, Bihar

Nechipu-Hoj in the State of Arunachal Pradesh: Ongoing

Need of the Project/Situation Before the Project	The existing road is a single lane road and not in traffic worthy condition. Consequently, passengers need to cover long distances via Assam to traverse from Central to Western Arunachal Pradesh, hence suffering inconvenience
Project	252.21 Km
Cost	INR 1,979 Cr. (Sanctioned)
Reduction in Travel time	More than 48 hours
Likely Completion	27.03.2021
Impact of the Project	The 2-laning of Nechipu to Hoj section will reduce travel time by more than 2 days and provide comfort and convenience to passengers by connecting important districts of West Kameng, East Kameng, Pakke Kessang & Papum Pare, thereby, boosting connectivity within the State of Arunachal Pradesh.



Nechipu-Hoj, Arunachal Pradesh

Dibang- Lohit River Bridge – Arunachal Pradesh: Completed

Need for the Project/Situation before Project	 Prior to this project, there was no link between Bomjur and Meka and Digaru to Chowkham on NH-52 Travel between two important district HQs of Roing and Pasighat was through Assam, leading to a long distance of 310 km to be traveled and dependence on ferry crossings, which delayed travel times Similarly, travel between two important district HQs of Tezu and Namsai used to take 195 km and the opposite banks of river Lohit were 150 km apart
Length of the Project	29.635 Km
Sanctioned Cost	INR 1,508.25 Cr.
Reduction in Distance/Travel time	300 Km/8 hours
No. of Bridges	5
Completion Date	2018
Impact of the Project	 The project established all weather and 24x7 direct connectivity between Pasighat- Roing and Namsai- Tezu, thereby reducing dependence on ferry crossing and providing socio-economic benefits to the region The distance between Roing and Pasighat and between Tezu and Namsai has been reduced from 310 km to 75 km and from 195 km to 57 km respectively





Dibang-Lohit River Bridge, Arunachal Pradesh





Ministry of Road Transport & Highways Government of India

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