

## CASE STUDY

# Madhya Pradesh Major District Road Project, India

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# Madhya Pradesh Major District Road Project, India

## *Executive Summary*

*Madhya Pradesh, India's second-largest state by area, faced persistent infrastructure challenges due to its landlocked geography, predominantly rural population, and low per capita income. The lack of adequate transport infrastructure in the state constrained access, raised transport costs, and limited market integration.*

*In November 2016, NDB approved a sovereign loan of USD 350 million to upgrade 1,500 km of Major District Roads to intermediate lane width with all-weather access, implemented by Madhya Pradesh Road Development Corporation. The project's expected impact was realised through increased productivity and economic growth in the predominantly rural areas of the state based on increased capacity, efficiency, and improved accessibility for the local population. The project contributed to substantial expansion of employment and income opportunities for the beneficiaries.*

*Key takeaways from the project include the importance of alignment with local development needs and the role of capable implementing agencies and robust institutional arrangements in translating finance into tangible outcomes.*

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## 1. DEVELOPMENT CONTEXT

Madhya Pradesh (MP) is India's second largest state by area. It has historically faced significant infrastructure challenges due to its landlocked geography, dispersed rural population, and comparatively low per capita income. At the time of project conception, MP's per capita income was estimated to be about 34% lower than the national average, and nearly 72% of its population lived in rural areas, making reliable road connectivity critical for inclusive development. Despite roads being the dominant mode of transport, around 90% of state highways were single-lane or even narrower, resulting in poor accessibility, high vehicle operating costs, and limited integration with national markets.

Major District Roads (MDRs) play a crucial role in connecting rural hinterlands to state highways (SHs), national highways (NHs), markets, education institutions, and healthcare facilities. However, underinvestment in road infrastructure led to bottlenecks, unsafe conditions, and unreliable all-weather connectivity, constraining economic growth and social mobility. Initial surveys found that MDRs had substandard geometry, which was not up to the standards of the Indian Road Congress (IRC). Recognising the infrastructure gap as a binding constraint on economic growth, the MP Government prioritised large-scale road upgradation as part of Madhya Pradesh State Road Development Plan 2013-2033. The plan envisaged to upgrade 19,000 kilometres of MDRs. Under the plan, there is a natural connectivity progression envisaged from NHs to SHs and further to MDRs.

## 2. PROJECT DESCRIPTION

NDB identified road sector as a high-impact investment opportunity aligned with MP's development mandate. In November 2016, NDB approved a sovereign loan of USD 350 million as part of a USD 500 million MP Major District Roads Project. The counterpart financing was by the Government of Madhya Pradesh. The project focused on upgrading around 1,500 km of MDRs to intermediate-lane, all-weather standards, incorporating road safety features and improved asset management systems. Construction contracts included 5-year performance-based maintenance obligations. The project complemented ongoing road development initiatives in the state funded by the Asian Development Bank. The project was implemented by the Madhya Pradesh Road Development Corporation Limited (MPRDC) under a sovereign on-lending arrangement from the Government of India.

The project was implemented over a period of five years from 2017 to 2022 and was the first NDB approved financed project in India. The project resulted in improvement of 1,543 km of all-season roads, exceeding the initial target and at a total cost of USD 463.55 million,<sup>1</sup> with NDB funding amounting to USD 327.73 million. It significantly enhanced the connectivity for villages along the corridors, integrating rural areas with state and national highway networks.

| Project Description        |                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------------------|
| <b>Country operation</b>   | India                                                                                           |
| <b>Approval date</b>       | November 22, 2016                                                                               |
| <b>Completion date</b>     | March 31, 2022                                                                                  |
| <b>Total project cost</b>  | USD 463.55 million                                                                              |
| <b>NDB financing</b>       | USD 327.73 million                                                                              |
| <b>Borrower</b>            | The Republic of India                                                                           |
| <b>Project entity</b>      | The State Government of Madhya Pradesh, India                                                   |
| <b>Type of loan</b>        | Sovereign                                                                                       |
| <b>Alignment with SDGs</b> | SDG 9.1 – Quality, reliable, sustainable, and resilient infrastructure                          |
|                            | SDG 3.6 – Reducing the number of global deaths and injuries from road traffic accidents by half |

<sup>1</sup> At completion, the realised project cost was 7.3% lower than the original estimate, largely on account of depreciation of INR against the USD.

### 3. DEVELOPMENT IMPACT<sup>2</sup>

The project's expected impact was realised through increased productivity and economic growth in the poorer-served areas of the state emanating from increased capacity, efficiency, and improved accessibility for the local population. The project generated substantial socio-economic benefits. Improved road conditions led to reduced travel times, lower vehicle operating costs, and improved road safety, including the elimination of approximately 130 accident black spots. These improvements translated into safer and more reliable transport for both passengers and goods. At completion, the project was estimated to have benefitted more than 434,000 rural population, improving access to schools, healthcare facilities, markets, and employment opportunities, thereby contributing to poverty reduction and social inclusion. Enhanced road connectivity also stimulated regional economic activity by enabling agricultural produce and small-scale manufactured goods to reach markets more efficiently.

| Project Impact                                                 |        |        |                |
|----------------------------------------------------------------|--------|--------|----------------|
| Component                                                      | Before | After  | Change         |
| Average traffic (vehicles/day)                                 | 259    | 404    | 56% increase   |
| Average travel time (minutes/km)                               | 2.5    | 1.5    | 40% decrease   |
| Vehicle operating cost (Medium Truck - INR/km)                 | 23     | 15.4   | 33% decrease   |
| Annual Fatal Accidents (Nos.)                                  | 295    | 177    | 40% decrease   |
| Blackspots (No.)                                               | 130    | 0      | 100% addressed |
| Number of hotels /eateries along the road (Nos.)               | 306    | 579    | 89% increase   |
| Number of shops along the road (Nos.)                          | 1,196  | 1,793  | 50% increase   |
| Average monthly income of the family in the Project area (INR) | 13,500 | 21,000 | 55% increase   |

**Source:** NDB Project Completion Report and MPRDC completion report.

The employment of local labourers in road construction saw a 73% increase. There has been a 50% increase in roadside shops and 89% increase in hotels and eateries along the road. Notably, beneficiaries' average monthly per capita income saw a 55% rise, increasing from INR 13,500 pre-project to INR 21,000 post-completion. Environmental and social sustainability outcomes were embedded through better road design, smoother traffic flows, and reduced congestion, contributing to lower fuel consumption and emissions compared with pre-project conditions. Overall, the project demonstrated how targeted transport infrastructure investments can act as catalysts for broad-based regional development.

<sup>2</sup> Attribution of broader socio-economic impacts should be interpreted cautiously, as outcomes may also reflect wider economic conditions, other government policies, and external factors.

## 4. SUCCESS FACTORS

**First, a strong alignment with regional development priorities** was fundamental. The project directly addressed MP's most critical infrastructure constraint, i.e., poor road connectivity in a landlocked, rural-dominated state. This alignment ensured political commitment at both state and national levels, facilitating approvals and counterpart financing.

**Second, robust institutional capability and Operation and Maintenance (O&M) arrangements** played a key role. Implementation by MPRDC, a specialised state-owned agency with prior experience in large road projects, supported efficient procurement, contract management, and technical supervision. The inclusion of 5-year performance-based maintenance responsibilities of upgraded MDRs by private contractors built into the civil works contracts helped ensure long-term asset quality beyond construction. This ensured that a) roads built are of high quality, b) guaranteed maintenance till the asset management is in place, and c) skill enhancement of MPRDC officials by collaborating with the private operators.

**Third, focus on road safety and inclusivity** strengthened development outcomes. The explicit identification and treatment of accident black spots, combined with all-weather standards, improved safety. By prioritising rural connectivity, the project ensured benefits accrued to historically underserved population rather than being concentrated on commercial traffic.

**Fourth, incentive for early completion of civil works from the contractual timeline** by MPRDC encouraged private contractors to maintain timeline.

**Fifth, during project appraisal, engagement of a transport sector consultant** by NDB, coupled with **extensive consultations with the project entity**, played a critical role in strengthening and finalizing the project design.

**Sixth, hybrid annuity modal (HAM)<sup>3</sup>** based financing was successful in attracting private players in infrastructure sector. Basis success of this experience, HAM was introduced in other NDB approved road projects.

**Finally, financial structure and cost sharing** contributed to sustainability. Sovereign lending through the Government of India reduced financing costs, while state-level co-financing ensured local ownership and accountability. The phased implementation horizon allowed gradual absorption of funds without excessive fiscal pressure on the state.

Together, these factors illustrated how multilateral development finance, when combined with strong local institutions and clear development objectives, can deliver lasting infrastructure and socio-economic benefits. To comprehensively address the challenges of road connectivity in the state, in September 2018, NDB approved two additional projects in Madhya Pradesh to provide support to the construction of bridges and roads. Further, in December 2024, NDB approved a sovereign loan to support the Madhya Pradesh State Highways Improvement Project.

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<sup>3</sup> In the HAM model, the project cost during construction is shared between the government and the private player at a pre-determined level. Upon completion of the project construction, the government pays semi-annual annuity amounts to the private player for the part of the project cost that was financed by it during construction.

## 5. KEY TAKEAWAYS

The NDB-funded MP Major District Road Project offers a compelling example of how strategic transport infrastructure investment can accelerate inclusive regional development. By addressing fundamental connectivity gaps, the project improved access to markets, services, and opportunities for hundreds of thousands of rural communities, while also strengthening road safety and environmental performance. Learning from project implementation came very handy for the Bank. NDB now reviews all projects inter-departmentally to strengthen quality of documents. It has also established a Project Preparation Fund for project preparation and technical assistance.

The project is a major success story. Key takeaways include the importance of alignment with local development needs and the role of capable implementing agencies in translating finance into tangible outcomes. The project also underscored the value of multilateral development financial institutions in supporting sub-national infrastructure, especially where domestic resources and technical capacity are constrained.

For policymakers, the MP experience highlights that rural and secondary road networks are as critical as highways for inclusive growth. For development financiers, it demonstrates that long-term engagement, institutional learning, and sustainability-oriented design can significantly enhance the impact of infrastructure lending. Overall, the project illustrated that well-designed road projects are not merely transport interventions, but powerful enablers of economic transformation and social inclusion when embedded in a broader development strategy.

## **About BRICS-NDB Knowledge Portal**

The BRICS-NDB Knowledge Portal is a joint initiative of BRICS and NDB. The Portal aims to institutionalise the existing knowledge available across BRICS Working Groups by systematically compiling them in alignment with NDB priority areas and sharing good practices from NDB's operations.

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