New Development Bank

INDEPENDENT EVALUATION OFFICE

Republic of India

MADHYA PRADESH
MAJOR DISTRICT
ROADS PROJECT

PROJECT PERFORMANCE EVALUATION

FINAL REPORT | DECEMBER 2022

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PREFACE

This report presents the findings of the project evaluation undertaken by the Independent Evaluation Office (IEO) of the Madhya Pradesh Major District Roads Project (MPMDRP) in the Republic of India. The MPMDRP is the first project evaluated by the IEO of the New Development Bank (NDB).

The central state of Madhya Pradesh is India's second-largest in terms of area and fifth-largest in population. While it has witnessed sharp increases in agriculture production over the years, it continues to rank relatively low in terms of socio-economic indicators. Around 37% of its population is multi-dimensionally poor, and the road density in the state (35 kms per 100 sq km) is less than half the national average of (75 kms).

The MPMDRP project had one main component of civil works and equipment. At an estimated cost of USD500 million, of which NDB financed USD 350 million, the project entailed the improvement of over 1,500 kms of road in 24 districts of MP. The objective was to improve the connectivity of the rural interiors of MP with the national and state highway networks while boosting economic activity and productivity in rural hinterlands.

Overall, the independent evaluation found that the project achieved its objectives and had a positive impact, for instance, in terms of time taken for travel to hospitals, educational institutions, and markets. It also witnessed an increase in shops and other amenities along the road. Most importantly, though this may not be attributed to the NDB-financed project, beneficiaries' incomes increased from INR13,500 to INR21,000 at the end of the project period.

However, the evaluation found some areas needing improvements, such as more thorough analytic work to underpin project design, stronger supervision, implementation support and monitoring and evaluation, and deeper continuity in NDB staff assigned to accompany project implementation. Moreover, the evaluation concluded that the absence of an India-NDB country strategy needs to be addressed on a priority basis, as such a strategy would provide the broader context for NDB activities in the country moving forward.

I am also delighted by the constructive NDB Management Response to this evaluation included in the report. I trust this report will be helpful to readers seeking to understand better the support NDB has provided in the country, including what has worked and what has not, and in prompting discussions on broader economic and social transformation.

Ashwani K. Muthoo
Director General
Independent Evaluation Office

ACKNOWLEDGEMENTS

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Mr. Ashwani K. Muthoo, Director-General, IEO, guided the preparation of this project performance evaluation report.

He was supported by Mr. Rakesh Nangia (team leader and evaluation specialist), Mr. Peter Freeman (transport specialist), Ms. Jaqueline Rabelo Souza (evaluation communication and outreach), and Mr. Ramakanth Bommakanti (evaluation research analyst).

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ARS	Accident Response System
BOD	Board of Directors
BOQ	Bill of Quantities
EIRR	Economic Internal Rates of Return
GDP	Gross Domestic Product
GOMP	Government of Madhya Pradesh
GOI	Government of India
IEO	Independent Evaluation Office
IMF	International Monetary Fund
INR	Indian Rupees
IRO	India Regional Office
M&E	Monitoring and Evaluation
MDB	Multilateral Development Bank
MDR	Major District Roads
MoRTH	Ministry of Road Transport and Highways
MP	Madhya Pradesh
MPMDRP	Madhya Pradesh Major District Roads Project
MPPWD	Madhya Pradesh Public Works Department
MPRDC	Madhya Pradesh Roads Development Corporation
NDB	New Development Bank
NH	National Highways
PCR	Project Completion Report
PDB	Project Document to the Board
PIO	Project Implementation Officer
PIU	Project Implementation Unit
PMGSY	Pradhan Mantri Gram Sadak Yojana
PPE	Project Performance Evaluation
RAMS	Road Asset Management System
SH	State Highways
TA	Technical Assistance
TPRM	Tripartite Portfolio Review Meeting
USD	United States Dollar

EXECUTIVE SUMMARY

Context

The Madhya Pradesh Major District Roads Project (MPMDRP) is the first project to be evaluated by the Independent Evaluation Office (IEO) of the New Development Bank (NDB). It was the first NDB-financed operation completed by the Bank in India.

India is the fifth largest economy in the world and is expected to grow by 6.8% in 2022. The Government of India (GOI) has set an ambitious vision to be a developed country by 2047. A major platform of this vision is strong investment in infrastructure.

Madhya Pradesh (MP) is a landlocked state of India, surrounded by five other states. The state has witnessed sharp increases in agricultural production and is a major producer of soybean, maize, wheat, and pulses. However, it is one of eight states with relatively weak socio-economic indicators. Around 37% of its population is multidimensionally poor. In addition, the road density in the state (35 kms per 100 sq km) is less than half the national average of (75 kms).

Project Design

The project's objective was to improve the connectivity of the interior of MP with the national and state highway networks, to boost economic activity and productivity in rural hinterlands. This was to be achieved through the upgradation, rehabilitation, or reconstruction of approximately 1,500 kms of district roads.

The project was implemented in 24 districts of the state. The total project cost was estimated at USD500 million, of which NBD financed USD350 million. The project had one main component: Civil Works and Equipment. The NDB Board approved the loan in November 2016, and implementation took place from early 2017 until March 2021, extended by one year to March 2022.

The Public Works Department of the GOMP was the executing agency that designated the MPRDC as the Project Implementing Unit (PIU).

Evaluation Methodology and Process

The evaluation followed internationally recognised relevance, effectiveness, efficiency, impact, and sustainability criteria. It also assessed compliance with relevant safeguards, policies, and guidelines.

Mixed methods were used for data collection and analysis. They included reviewing secondary data, site visits, and collecting additional information and data from multiple national, state, and community stakeholders using semi-structured questionnaires. Triangulation techniques were used to derive evaluation findings. Two field missions to the project site were conducted in July and September 2022, one for planning and another for collecting and analysing additional evidence. The draft methodology and evaluation report were shared with NDB Management and partners in India for comments. A final stakeholders' workshop was held in December 2022 in Delhi to discuss the evaluation report.

Project Performance

Relevance: *Satisfactory*
The project objectives were aligned with GOI and GOMP priorities for social and economic transformation and NDB institutional strategy. In particular, they were consistent with GOI's 12th Five-year plan and the MP State Road Development Plan (2013-2033). However, the evaluation could not assess the alignment of project objectives against NDB's strategic objectives in India, as NDB does not yet have a country strategy for India.

In terms of project design, MPRDC was an excellent choice of PIU, given their overall performance in road development and experience of working with other Multilateral Development Banks (MDBs). Project design benefitted from a Review of the Environmental and Social Country Framework (India) with MDBs.

The various roads (61 sub-projects) were selected using criteria well articulated in the appraisal document. However, the design would have benefitted from more comprehensive analytical work on the road sector. For instance, the decision to favour concrete over a bitumen road surface is questionable and needs to be adequately analysed in project design. Finally, no provisions were made in the design for providing technical assistance to the project team during implementation.

Effectiveness: *Satisfactory*
Generally, the project met its wider objectives of improving connectivity and supporting economic and social transformation in the state.

The project outputs surpassed the original targets by completion. More specifically, 1,551 kms of major district roads were upgraded compared to the 1,500 kms targeted in the project design.

Project outcomes also exceeded targets. For example, the project contributed to increased traffic volume by 45% (target was 30%), reduced travel times (actual 55% vs. 25% target), reduction in fatal road accidents (actual 40% vs. 25% target), and vehicle operating costs (actual 35% vs. 25% target). The engineering design eliminated 130 blackspots or hazardous locations. MPRDC also has an Accident Response System (ARS) and is currently developing a Road Asset Management System (RAMS). Partnership with private sector operators in road development and maintenance was an essential feature of the project.

Project effectiveness was constrained by a few factors, such as insufficient supervision and implementation support by NDB and the need for a more comprehensive approach to developing the transport sector in MP. Moreover, the evaluation did not find evidence of a systematic assessment of the sub-projects selected based on the agreed criteria.

Efficiency: *Moderately Satisfactory*
The project start-up was delayed by more than 200 days, and the closing date had to be extended by a year due to delays during implementation. The reasons for the delay were not only related to COVID. They ranged from problems in receiving approval and permission from various government departments to changes in the scope of work, shifting of electrical utilities, and adverse climate conditions.

Moreover, the cost per km of road was slightly higher than, for example, the Asian Development Bank (ADB) funded projects for road development in MP, and the cost per beneficiary at just more than USD1,000 is relatively high by international standards.

Finally, it is not possible to determine the costs incurred for project management, as the project cost tables and financial reporting did not capture this. As a result, disbursement performance is lower than anticipated at appraisal (at completion, around USD460 million were disbursed as compared to the

total project costs of USD500 million). Moreover, a broader assessment of disbursement performance was not possible, as the design documentation did not include disbursement projections by year.

Impact: *Satisfactory*
Many impacts take time to manifest, so assessing the extent of the overall development impact is premature. Nevertheless, some evidence of emerging impact was available at project completion, even though they may not be attributed to road development.

For example, the evaluation found that travel time to primary healthcare centers and hospitals decreased to 46% and 29%, respectively. This enhanced access will likely contribute to inter-alia and maternal and infant mortality improvements. Equally, the time taken to reach schools, colleges, and universities declined by up to 22%, which may contribute to improved education outcomes and future opportunities for youth. Small businesses have also increased by close to 70% compared to the project's start. Most importantly, there has been an increase in the average monthly incomes of beneficiaries by around 55%, from INR13,500 to 21,000. These are critical dimensions, indicating that access to roads promoted by the project has improved general livelihoods among the ultimate beneficiaries in the state.

Sustainability: *Satisfactory*
MPRDC is responsible for maintaining a network of over 22,000 kms. The private sector maintains almost half of these roads.

The GOMP funds the maintenance of the remaining 53%. A State Highway Fund was established in 2012, whereby the funds allocated are used primarily for maintaining and repairing roads, with the use of the funds determined by the MPRDC. The latter is also set to implement the first stage of its RAMS, which will collect relevant data to help decision-makers allocate resources for cost-effective maintenance on an area-wide basis.

However, the project design needed to include a transparent exit strategy, further enhancing sustainability prospects. Lastly, there are uncertainties about allocating required resources for the RAMS, which could limit the wider sustainability of benefits.

Overall Project Performance: *Satisfactory*
Overall the project performance is a composite criterion of relevance, effectiveness, efficiency, impact, and sustainability. This was assessed to be satisfactory, with areas needing future attention.

Monitoring and Evaluation[1]

The project had a monitoring and evaluation (M&E) system in place. The project appraisal report did not include an explicit theory of change, though it included a "Design and Monitoring Framework." However, there were no indicators of benefits to women and youth, improved access to markets, productivity, or economic growth.

In general, the Design and Monitoring Framework was not a coherent Results Management Framework, which should be tightly linked to the project design and theory of change. The project cost tables did not budget for M&E activities. Most importantly, M&E was not used as a key management instrument for making mid-course adjustments and for learning, documenting experiences, and good practices. In general, little attention was given to knowledge management in the broader sense, which is a missed opportunity given the operation's overall success.

Compliance: *Moderately Satisfactory*
Financial management and procurement had no significant issues, with 13 packages under civil

1 M&E is generally not a standalone evaluation criterion and thus is not rated.

works and four packages under procurement earmarked for advance procurement. However, there needed to be more clarity regarding adherence to country systems, and MPRDC was guided by ADB guidelines with which they were familiar. Environmental and social safeguards were followed. The project was classified as Category-B; hence, there were no significant issues related to land acquisition or involuntary resettlement.

Partner Performance

The Department of Economic Affairs in the Ministry of Finance provided good support through various measures, such as chairing Tripartite Portfolio Meetings, facilitating loan disbursements, and helping resolve implementation issues. The Ministry of Road Transport and Highways (MoRTH) and NITI Aayog also played an essential role in the standard-setting by sharing best practices and guidelines. However, start-up delays could have been avoided through better planning. The GOMP performed satisfactorily by demonstrating a deep commitment to the project's implementation. The PIU's performance was particularly good. The engagement of private sector operators in implementing and maintaining roads is a good practice. Furthermore, RAMS and ARS are creditable efforts to enhance outcomes. However, some things needed improvements, such as the opacity in the road selection systems, multiple emergency numbers, and insufficient mechanisms for protecting assets. In general, the composite Government performance was satisfactory.

NDB's performance was moderately unsatisfactory. While recognising this was one of the first projects approved by NDB and the limited staff capacity at the time, project design and supervision weaknesses were limiting factors. Also, the frequent changes in the lead NDB officer for the project did not favour continuity in dialogue with in-country partners, limiting the Bank's oversight during implementation. No midterm review of the project was undertaken. The loan agreement also needed to capture some key dimensions of the project. For example, the project's impact level objective to improve productivity, economic growth, and enterprise development required to be included, and no reference was made to M&E and project supervision.

Conclusions

Overall, by promoting access to roads within the broader policy context of federal and state Governments, the project has strengthened connectivity and improved general livelihoods in MP. It laid the basis for a partnership with NDB, which has since financed a follow-up project devoted to promoting access to roads in the state. Key determining factors for the project's success included the PIU's performance and experience and the private sector's involvement as implementation and maintenance partners.

This was the first NDB-funded project completed in India. Understandably, the project design prepared in 2016 could have addressed only some of the areas for development identified by this evaluation. Nevertheless, the areas for development merit attention in future and ongoing NDB-funded projects.

Some of the areas that limited project performance include the lack of a broader country strategy to guide the India-NDB partnership, insufficient analytic work to inform choices and priorities at design, weak supervision and implementation support and monitoring and evaluation, and limited attention to non-lending activities such as knowledge management and innovation. The quality of the design document and loan agreement could also have been sharper in several aspects and better aligned. For example, knowledge management received little attention from either NDB or project authorities.

Lastly, frequent changes in the lead NDB project officer and insufficient engagement by senior NDB staff during implementation also limited performance. The decision by NDB to establish its India

Regional Office in Gujarat with an experienced Director-General is a step in the right direction, though the office's role moving forward (in design, supervision, implementation support, and overall monitoring) requires clarity. The recent recruitment of a Principal Professional in the Project Portfolio Management Department is also a welcome to strengthen the function. However, it will require more staff to support operations in M&E and portfolio monitoring.

Recommendations

Recommendations for NDB

Recommendation 1: *Preparation of an India-NDB Country Strategy*

In consultation with GOI, NDB should prepare a country strategy to guide its partnership with India moving forward. The country strategy would articulate NDB priorities for a specific period and serve as an instrument for programming and resource allocation. It would also serve as the overarching framework for project design. In line with the NDB Articles of Agreement, the country strategy should be presented to its Board of Directors for consideration, along with written comments by the IEO thereon.

Recommendation 2: *Strengthen Design Quality at Entry*

The evaluation recommends that project design processes be reviewed and strengthened. These should be underpinned by deeper analytical work and build on lessons learned from NDB operations and those of other partners. Project designs should also include exit strategies to improve sustainability and provisions for technical assistance during design and implementation. In line with NDB's General Strategy for 2022-2026, more attention should be devoted to knowledge management and innovation design for better effectiveness and scaling up impact.

Implementing this recommendation would require deeper NDB involvement in design right from the beginning and a commensurate adjustment to its current operating model.

Recommendation 3: *Improve Project Supervision and Implementation Support*

NDB should strengthen supervision activities, including time spent in the field, deepen the composition of supervision teams, improve the quality of supervision outputs, and ensure coherent follow-up to supervision recommendations. More continuity needs to be ensured by the NDB officer responsible for accompanying project implementation. NDB should undertake a comprehensive and regular midterm review of ongoing and future operations. While project implementation is the responsibility of the executing agency, NDB should offer a greater degree of implementation support to project teams in specific areas (such as M&E or financial management). This would be consistent with *Managing Development Results* in the NDB's General Strategy and Articles of Agreement.

Recommendation 4: *Enhance Project Monitoring and Evaluation*

Project designs should have a dedicated section on M&E plans. Such plans should include a clear statement of objectives, a theory of change, and a well-articulated results management framework. Project cost tables should consist of specific budgets for M&E. An M&E officer should be foreseen as part of the project implementation teams so that M&E is used not only as a management tool but also for learning and documenting lessons and good practices. The loan agreements should better capture the project design's main dimensions and include a short article on M&E and NDB project supervision. Robust project-level M&E systems will also contribute to improved knowledge management by NDB at large and other partners.

Recommendation 5: *Further Articulate the Role of the India Regional Office in Country Programme Delivery*

In line with *Strengthening On-the-ground Presence* emphasised in the NDB General Strategy, the India regional office's role, responsibilities, and delegation of authority should be clearly articulated. This would cover engagement in design, supervision and implementation support, policy engagement, partnership development, and broader project and portfolio monitoring and related activities.

Recommendations for the Government of MP

Recommendation 1: *Prepare a Multimodal Transport Strategy/ Plan to Support Effective Connectivity*

A multimodal strategy would ensure the cost-effective and efficient movement of goods and people. This may be through roads or other means, including the links to other modalities such as railways and waterways that should be explored. It should also link with the recently launched National Logistics Policy.

Recommendation 2: *Preserve Assets and Strengthen Road Safety*

GOMP should continue to engage the private sector in construction and maintenance activities. It should undertake measures to ensure the strict enforcement of axle load management and expand the RAMS and ARS systems.

Recommendation 3: *Develop Guidelines for Road Selection and Ensure Enforcement*

GOMP should make its guidelines for road selection public to ensure transparency. It would be helpful to clarify the circumstances when it is appropriate to use concrete instead of bitumen roads.

NDB MANAGEMENT RESPONSE

NDB Management recognises that the first IEO evaluation report is an important milestone for the institution. It has a symbolic meaning that the first projects approved by the Bank have been completed, and the institution is ready to enter a stage when its independent evaluation function is officially established and functioning.

The Management compliments the IEO for the excellent work on the first evaluation report, particularly considering the short period since IEO's establishment and the limited size IEO has today. Going forward, the Management encourages and suggests that IEO contextualise and customise its evaluation approach considering the Bank's specific context defined by NDB's General Strategy and business niche, i.e. (1) use of country systems, (2) demand-driven model, and (3) lean NDB structure. To enhance the relevance of IEO's evaluation work, the Management further suggests that a well-defined guideline rooted in NDB's fundamental approaches be developed by IEO.

The Management, therefore, welcomes the findings and recommendations of the Project Performance Evaluation of the India Madhya Pradesh Major District Roads Project (PPE). The Management appreciates that IEO's assessment considers the clarifications from the Bank's relevant departments. The Management largely agrees with the well-intended PPE recommendations and assures that they will be considered favorably for the country program and future projects. The findings captured the essence of the project, which provided useful lessons to the Bank's project portfolio. The Management's views on the proposed recommendations are presented below:

Recommendation 1: *Preparation of an India-NDB Country Strategy*

In consultation with the Government of India (GOI), the NDB should prepare a country strategy to guide its partnership with India moving forward. The country strategy would articulate NDB priorities for a specific period and serve as an instrument for programming and resource allocation. It would also serve as the overarching framework for project design. In line with the Bank's Articles of Agreement, the country strategy should be presented to its Board of Directors for consideration, along with written comments by the IEO thereon.

Management Response

Management agrees with Recommendation 1. In line with the PPE's assessment, Management believes that the Country Partnership Plan (CPP) should guide the partnership with and the operations in the member country, as envisaged by NDB policies. The Management fully supports the preparation of CPPs in close collaboration with the member countries, and work in this direction has been initiated. Operations programming will be initiated in conjunction with the CPP to connect it with the pipeline formulation for projects.

Recommendation 2: *Strengthen Design Quality at Entry*

The evaluation recommends the need to review and strengthen the project design. The latter should be underpinned by deeper analytical work and build on lessons learned from NDB operations and those of other partners. Project designs should also include exit strategies to improve sustainability and provisions for technical assistance during design and implementation. In line with the Bank's General Strategy for 2022-2026, more attention should also be devoted to design to knowledge management and innovation for better effectiveness and scaling up impact. Implementing this recommendation would require deeper NDB involvement from the beginning in design and a commensurate adjustment to its current operating model.

Management Response

Management agrees with Recommendation 2. The Bank has very important lessons learned from the past seven years of operations. There are efforts and initiatives to record the lessons learned in the project cycle through ad-hoc trials, however not in a systematic manner. The Management has emphasised knowledge management in the past. The teams have been recording the lessons learned in their PDBs recently. Full-cycle knowledge management would request collaboration from the Bank's different departments, including operations, ESG, procurement, legal, risk, strategy, etc. The Management will provide guidance to the teams to start a systematic framework for distilling, recording, sharing, and applying knowledge. The Management will instruct a workshop to be held in the first quarter of 2023 to discuss knowledge management in detail and the approach forward.

As for technical assistance, in the project portfolio, the project teams had leveraged resources internationally for expertise relevant to improve the project design for some projects in the due diligence phases, when the needs were diagnosed during the processing stage, and when communicating with the client. This doesn't apply to all projects. It varies from team to team. Therefore, the Management does see the need to emphasize the early identification of the need for technical assistance to improve the design, apply knowledge learned, and enhance the quality of the projects. The Management will also advocate using the Bank's Project Preparation Fund (PPF).

Recommendation 3: *Improve Project Supervision and Implementation Support*

NDB should strengthen supervision activities, including time spent in the field, deepen the composition of supervision teams, improve the quality of supervision outputs, and ensure coherent follow-up to supervision recommendations. More continuity needs to be granted to the NDB officer responsible for accompanying project implementation. A comprehensive MTR should be undertaken regularly in ongoing and future operations. While project implementation is the responsibility of the executing agency, NDB should offer a greater degree of implementation support to project teams in specific areas (e.g., M&E, financial management, etc.). This would be consistent with Managing Development Results in the Bank's General Strategy and its Articles of Agreement.

Management Response

Management agrees with recommendation 3. The Management agrees with the need to improve consistency and continuity of project supervision and implementation support, as well as to enhance the degree of implementation support. The Management will engage the regional offices and centres to ensure the continuity of implementation officers for projects and to take a more proactive role in implementation support, especially for those projects that lack the capacity for implementation management.

Recommendation 4: *Enhance Project Monitoring and Evaluation*

Project designs should have a dedicated section on M&E plans. Such plans should include a clear statement of objectives, a theory of change, and a well-articulated results management framework. Specific budgets for M&E should be included in the project cost tables. An M&E officer should be foreseen as part of the project implementation teams so that M&E is used not only as a management tool but also for learning and documenting lessons and good practices. The loan agreements should better capture the main dimensions of project design and also include a short article on M&E and NDB project supervision. Strong project-level M&E systems will also contribute to improved knowledge management by the Bank at large and other partners.

Management Response

Management mostly agrees with Recommendation 4. The Management agrees that we need to strengthen the logic of how NDB financing to a project connects with the outcome and the project's impacts. Currently, we have a results chain and economic benefits, but we still lack a systematic framework. The theory of change for NDB's support towards projects for the final impacts can be

explained at the Country Partnership Plan (CPP) level as a systematic framework. Further, monitoring and evaluation should be strengthened in the PDB in the implementation section of the PDB. Documenting lessons should be an effort for both the team in the processing stage as well as in the implementation stage.

Recommendation 5: *Further, Articulate the Role of the India Regional Office in Country Programme Delivery*

In line with Strengthening On-the-ground Presence emphasized in the Bank's General Strategy, the role, responsibilities, and delegation of authority to the Indian Regional Office should be clearly articulated. This would cover engagement in design, supervision and implementation support, policy engagement, partnership development, and broader project and portfolio monitoring and related activities.

Management Response

Management agrees with Recommendation 5. The Management agrees with the recommendation to further clarify and articulate the role of the Indian Regional Office (IRO). At the same time, it should be noted that the PPE project was approved and implemented before the approval of the new organizational structure and establishment of IRO. However, the new organizational structure approved by the BoD in December 2020 and the establishment of ToRs for the Vice-Presidency of Operations were important steps in that direction and determined the roles and responsibilities of headquarters and regional offices in the project cycle.

IRO is currently being set up with ongoing recruitment, and the Management is prioritizing this process to ensure the efficient handover of the project portfolio from headquarters to IRO. The Management will instruct the headquarter operations teams to continue working closely with regional offices and centers to further improve the division of labor and collaboration among them.

The Management thanks IEO for the constructive recommendations and will ensure that lessons learned from this work are internalised to improve the performance of NDB-financed projects in India and other member countries. The Management will instruct the teams to take immediate reactions to the findings and recommendations.

The Management also believes that going forward, it is preferable, whenever possible, to follow the standard project evaluation process, when first the completion report is prepared by the Bank in consultation with the borrower, then it is reviewed and validated by IEO. This process and evaluation methodology should be documented in a guideline, which the Management recommends IEO put in place soon so that NDB teams and its clients understand the applicable framework. The evaluation methodology is also required for project teams to prepare their first completion reports.

I. BACKGROUND

1. The MPMDRP is the first project to be evaluated by the IEO of the NDB. Accordingly, the evaluation methodology and process will likely provide valuable inputs for subsequent evaluations by IEO. This was the first NDB-financed operation completed in India.

2. The MPMDRP's objective was to upgrade major district roads in MP, thereby improving the connectivity of the interior areas of the state with the national and state highway networks (See Annex I). The project comprised the upgradation, rehabilitation, or reconstruction of approximately 1,500 kms of district roads to intermediate lane, all-weather standards, with road safety features and improved road asset maintenance and management.

3. NDB Board approved the project loan (Loan No 16INO2) on 22 November 2016. The total project cost was estimated to be USD500 million, of which NDB financed USD350 million, or 70%, through a Project Financing Facility. GOMP provided the remaining USD150 million in counterpart financing. The implementation took place from early 2017 until March 2021, extended by one year to March 2022.

4. NDB and GOMP signed the Loan and Project Agreements on 30 March 2017 (See Annex II). The Loan Agreement was amended twice, first on 17 October 2017, to clarify the submission of drawdown requests, calculation of interest payable, and the need for NDB approval for material amendments or modifications that led to a variation of 15% or more. The second amendment on 31 March 2021 was to extend the closing date by one year to 31 March 2022. The BOD approved a follow-on loan, Madhya Pradesh Major District Roads II, on 18 September 2018.

A. Country Context

5. India is the fifth largest economy[2] and the second most populous country in the world (1,392 million in 2021).[3] It has experienced an average Gross Domestic Product (GDP) growth rate of 5.5% over the past decade.[4] Although there was a contraction of 6% in the economy in 2020, mostly on account of the COVID-19 pandemic, GDP growth has recovered since then and is expected to grow by 6.8% in 2022.[5]

6. The International Monetary Fund (IMF) predicts a global recession in 2023. Nevertheless, foreign exchange reserves of USD634 billion,[6] sustained foreign direct investment, and rising export earnings for India are expected to provide a buffer against possible global liquidity tightening.[7] India thus continues to be a bright spot in the increasingly gloomy global economic forecast.[8]

2 India has overtaken the United Kingdom to be the 5th largest economy as per IMF projections https://www.imf.org/external/datamapper/NGDPD@WEO/IND/GBR
3 World Population Prospects 2022, UN Department of Economic and Social Affairs https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/wpp2022_summary_of_results.pdf
4 World Bank.
5 Economic Survey 2021-22, Ministry of Finance, Government of India.
6 India and the IMF, https://www.imf.org/en/Countries/IND.
7 Id at 5.
8 Is a Global Recession Imminent? World Bank.

TABLE 1

Economic statistics of India

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
								-------- Projected --------		
GDP, current prices (USD billion)	2,295	2,651	2,703	2,832	2,668	3,176	3,469	3,820	4,170	4,547
Real GDP Growth	8.3%	6.8%	6.5%	3.7%	-6.6%	8.7%	6.8%	6.1%	6.8%	6.8%
Per capita GDP (USD)	1,733	1,981	1,998	2,072	1,933	2,280	2,466	2,691	2,911	3,147
Share of world GDP (in PPP terms)	6.7%	6.8%	7.0%	7.0%	6.8%	7.0%	7.2%	7.5%	7.7%	8.0%
Population (millions)	1,325	1,339	1,353	1,366	1,380	1,393	1,407	1,420	1,433	1,445

Source: IMF World Economic Outlook October 2022

7. With a population already exceeding 1.6 billion, India will become the most populous country sometime in 2023[9], according to the United Nations.[10] Despite associated development challenges, the GOI has set an ambitious vision to become a developed country by 2047. A major platform of this vision is a substantial investment in infrastructure development, as it has positive externalities and strong backward and forward linkages.

8. PM Gati Shakti, a national master plan for multi-modal connectivity, for example, is a digital platform that will bring together 16 Ministries for integrated planning and coordinated implementation of infrastructure connectivity projects.[11] It is supported by the National Logistics Policy.[12]

B. State and Local Context

9. MP is a landlocked state located in the centre of India, bordered by 5 other states, i.e., Chhattisgarh, Gujarat, Maharashtra, Rajasthan, and Uttar Pradesh. It is the second-largest state in area and the fifth-most populous (85 million in 2022). The state has several major rivers, including the Narmada, Tapti, Chambal, Betwa, Son, and Godavari. However, these rivers have yet to be used for transport. Forests cover 25% of its total area, the highest area under forest cover by any state in India.[13] As a result, MP has important wildlife sanctuaries, national parks, and tiger reserves. It has also established several cultural sites to attract tourists.

10. MP is one of India's primary states for mineral production, accounting for around 90% of the diamond resources in the country. In addition, the state has rich coal, copper, limestone, and manganese reserves. The agricultural sector has contributed significantly (47%) to the economy of MP, followed by services (34%) and manufacturing (19%). The GOMP has placed a high emphasis on the farm sector in general, as around 70% of the population lives in rural areas.[14] Half of the

9 Id at 3.
10 UN data.
11 PM Gati Shakti, PIB https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1763638
12 National Logistics Policy 2022, Ministry of Commerce and Industry, Government of India https://dpiit.gov.in/sites/default/files/NationalLogisticsPolicy_2022_29September2022_0.pdf
13 *Forest Cover in India*, Press Information Bureau, Government of India.
14 *Madhya Pradesh – History and Current Overview in Agriculture, Farmer Welfare and Agriculture Development Department*, Government of Madhya Pradesh.

state's geographical area is under cultivation, and the crop density is 166%. On the other hand, the total irrigated area is 11.1 million hectares. Crop productivity has increased sharply in the last decade, with the per-hectare yield of paddy rising by 242%, wheat by 180%, and cotton by 193%.

11. Moreover, MP is the leading producer of soy bean, pulses (such as gram, urad, and tur), maize, and barley.[15] Recently, MP replaced Punjab as the largest wheat producer in India. Gross State Domestic Product (GSDP) for 2022-23 is estimated to be almost USD151 billion, registering an annual growth of 10% over FY22. Although its growth rate has been above the national average over the past couple of years, MP is yet to realize its full potential.

12. MP is one of eight states with relatively weak socio-economic indicators. GOI has designated it as an Empowered Action Group (EAG) state that requires special attention. Almost 37% of its population is multidimensionally poor, the fourth highest percentage in the country.[16]

13. The infant mortality rate is 46 per 1000 live births, higher than the national average of 30 and the maternal mortality rate is 173 per 100,000 live births, also higher than the national average of 113. Furthermore, the literacy rate in the state is 69.32% which is lower than the national average of 74.04%.[17]

14. MP also has a significant population of socially and economically weaker groups, with 36.7% of the population belonging to the scheduled tribes and scheduled castes.

15. The state has a lower-than-average urbanisation rate with 72.4% of its population living in rural areas, compared to the national average of 68.9%. Its labour force participation rate in 2021 was 35.8%, slightly lower than the national average of 37.5%. In contrast, females comprise 37.2% of the workforce, which is higher than the national average of 28.7%.[18]

C. Sector Context

16. Nationally, the transport sector has seen a surge in development in recent years. India has recognised roads as being crucial for socio-economic development. India's road network, at 6.371 million kms[19] is the second largest in the world. The network consists of National Highways (NHs) (2%), State Highways (SHs) (3%), Urban Roads (9%), District Roads (10%), Rural Roads (73%), and Project Roads (6%).[20]

17. Roads constructed per day increased to 36.5 kms in 2020-2021, which was 30% higher than the previous year.[21] GOI has focused on providing all-weather rural access roads through the Pradhan Mantri Gram Sadak Yojana (PMGSY), driven by the National Roads Development Agency. Some states have supplementary schemes to further this programme.

18. The Ministry of Rural Development's[22] vision document states the need to connect all rural habitations with a population of at least 250 people through all-season roads to local markets, schools, and health clinics.

19. MP, located at the intersection of India's major North-South and East-West transport corridors, occupies a strategic position in the heartland. Yet, with 35 kms of roads (all types) per 100 sq

15 Id.
16 *India: National Multidimensional Poverty Index*, NITI Aayog https://www.niti.gov.in/sites/default/files/2021-11/National_MPI_India-11242021.pdf
17 2011 census. The 2021 census has been delayed.
18 Women Participation in Workforce, PIB. https://pib.gov.in/PressReleasePage.aspx?PRID=1805783
19 As on 31st March 2019, Economic Survey 2021-22, Ministry of Finance, Government of India.
20 Road Transport Yearbook (2017-18 & 2018-19), Ministry of Road Transport and Highways (MoRTH), Government of India.
21 *Economic Survey 2021-22*, Ministry of Finance, Government of India.
22 *Vision Document 2019-2024*, Ministry of Rural Development, Government of India, 2019.

km of geographical area, it is less than half of the national average of 75 kms. In addition, MP accounts for just 8,772 kms of NHs (6.6%). The NHs density (km of NH per 1,000 sq km of area) in the state is 28.5, well below the national average of 40.2. The NH density expressed in terms of population (km of NH per 100,000 of the population) is 12.1 against the national figure of 11.

20. Meanwhile, the number of registered motor vehicles in MP was growing and stood at 15.3 million in 2019,[23] the seventh highest amongst the various states in the country. MPs SH network is approximately 11,000 kms; the district and rural roads networks are 20,000 kms and 91,300 kms, respectively. This relatively low density of roads is a significant issue in a landlocked state[24] since poor road connectivity contributes to weak economic and social development. India's railway network is the third largest in the world. On average, India added 1,835 track kms per year between 2014-2021. This network carried around 1.23 billion tonnes of freight and 1.25 billion passengers in 2021. The Indian Railways is also targeting 100% electrification of its network by December 2023.[25] Railways support a roll-on roll-off system, which allows vehicles to roll onto a train and be driven on and off a shipping vessel. There are 5,148 kms of railway lines within MP.[26] Meanwhile, the Airports Authority of India (AAI) has announced an investment of USD3.3 billion to expand existing airports in the country and modernise them over the next five years.[27]

23 As of March 31, 2019, *Road Transport Yearbook (2017-18 & 2018-19)*, Ministry of Road Transport and Highways (MoRTH), Government of India.
24 *Madhya Pradesh District Roads II Project*, Social Safeguards Monitoring Report, MPRDC, 2018
25 *Economic Survey 2021-22*, Ministry of Finance, Government of India.
26 www.statista.com/statistics/1079426/India-railway-route-length-in-madhya-pradesh/
27 AAI has taken up developmental projects worth Rs. 25,000 crores over the next five years, PIB https://pib.gov.in/Pressreleaseshare.aspx?PRID=1776086.

II. PROJECT BACKGROUND

21. NDB provided the GOI with a Project Financing Facility of up to USD350 million. This was on-lent to the GOMP for upgrading major district roads in the state to improve rural connectivity. Under the overall responsibility of the MP Public Works Department (MPPWD), the project was implemented primarily by the MP Road Development Corporation (MPRDC) in cooperation with other state Government agencies. The project complemented ongoing initiatives funded by the Asian Development Bank (ADB). Table 2 shows the project investment plan, and Table 3 shows the cost by component at appraisal and completion.

TABLE 2

Project investment plan (USD thousand)

Item	Expenditure amount	NDB funding	Counterpart funding
Civil works and equipment	430,000	314,000	116,000
Contingencies	49,125	35,125	14,000
Supervision, consultancy and administration	20,000	-	20,000
Financing charges	875	875	-
Total	500,000	350,000	150,000

Source: Project Document to the Board (PDB), MPMDRP

TABLE 3

Project cost at appraisal and completion (USD thousand)

Item	Original	Revised
Civil works and equipment	430,000	463,125
Contingencies	49,125	23,000
Supervision, consultancy and administration	20,000	13,000
Financing charges	875	875
Total	500,000	500,000

Source: Project Document to the Board (PDB), MPMDRP

A. Project Objectives

22. The project's objective was the upgradation of major district roads in MP to improve the connectivity of the state's interior areas with the NH and SH networks. The project comprised the upgradation, rehabilitation, or reconstruction of approximately 1,500 kms of district roads to intermediate lane, all-weather standards, with road safety features and improved road asset maintenance and management. The project's expected impact was realised through increased productivity and economic growth in the poorer-served areas of the state based on increased capacity, efficiency, and improved accessibility for the local population.

B. Project Design

23. The project, as originally conceived, involved upgrading 56 road stretches, totalling approximately 1,500 kms in 24 districts across the state (See Annex I for a map of the project area). These were selected based on a set criterion, including project readiness, current traffic volumes and projected traffic growth, connectivity to important socio-economic activity hubs, connectivity to tourism and religious centers, connectivity to the NH and SH networks, and appropriate socio-environmental impact assessment and acceptable Economic Internal Rates of Return (EIRRs).

24. The upgrades entailed widening the carriageways to intermediate lane configuration (i.e., one-and-a-half lane widths). None of the sub-project roads passed through wildlife sanctuaries or habitats of indigenous people. The project design did not envisage any land acquisition, rehabilitation, and resettlement for any sub-projects except for minor land requirements related to geometric corrections of alignments near accident blackspots.

C. Implementation Arrangements

25. MPPWD was the project's Executing Agency, while MPRDC acted as the Project Implementation Agency. MPRDC identified a central Project Implementation Unit (PIU) headed by a Project Director with the rank of Chief Engineer. In addition, one General Manager, one Assistant General Manager, and two Managers assisted the Chief Engineer. MPPWD field offices were used for the day-to-day implementation and project monitoring. There were several packages in this project. Each package had dedicated Project Managers of the rank of Executive Engineer with adequate technical and administrative authority for expeditious project implementation. They were assisted by field staff at the actual project sites. MPRDC also engaged construction supervision consultants for project implementation oversight. All goods and works were procured according to procedures agreed to with NDB. Road construction contracts were awarded in packages in a phased manner. The duration of each contract depended on the road length. The expected construction periods were three years.

26. Due to the phasing of contracts and expected minor delays in construction, the implementation period was expected to take untill March 2021. Loan repayments were to commence after a five-year grace period. Four Project Review (Supervision) Missions and seven Tripartite Portfolio Review Meetings (TPRM) tracked the project's progress and performance. Department of Economic Affairs (DEA), Ministry of Finance, GOI chaired the TPRMs and included participation from the PIU and NDB. The first two TPRMs, pre-COVID-19, were held in New Delhi, while the subsequent ones were held virtually.

27. Aide Memoires, Project Progress Reports, and Back to Office Reports (see Table 4) provided useful information on the project's developments. The Project Completion Report (PCR) is under preparation, scheduled for 2023, and is yet to be available. While the Loan Agreement and the Appraisal document do not mention a timeline for the same, the Appraisal document notes that

a Final Completion Report (presumably PCR) will be prepared. Furthermore, the NDB Policy on Sovereign Loans and Loans with Sovereign Guarantee also does not mention any requirements or timelines.

TABLE 4

Tracking project progress

Reports	Reporting period
Project progress report	January 01, 2017 – March 31, 2018
Aide memoire for project review mission	June 04, 2018 – June 08, 2018
Project progress report	April 01, 2018 – March 31, 2019
Aide memoire for project review mission	December 03, 2018 – December 05, 2018
Aide memoire for project review mission	February 18, 2020 – February 21, 2020
Project progress report	April 01, 2019 – March 31, 2020
Aide memoire for project review mission	March 01 – 04, 2022
Back to office report	March 01 – 04, 2022
Project progress report	April 01, 2020 – September 30, 2020
Project progress report	October 01, 2020 – March 31, 2021
Project progress report	April 01, 2021 – September 30, 2021
Project progress report	October 01, 2021 – March 31, 2022

Source: Project Performance Evaluation (PPE), Aide Memoires, Back to Office Reports, NDB

III. EVALUATION OBJECTIVES, METHODOLOGY AND PROCESS

A. Evaluation Objectives

28. MPMDRP evaluation is part of IEO's initial work programme agreed upon with the BOD in June 2022. The IEO criteria for selecting projects for independent evaluation included closed (or nearly closed) operations, sector coverage, financing type, documentation availability, and country coverage. In choosing the India project for an evaluation, IEO consulted with the NDB Management, particularly with operational teams. The evaluation results, including the Management Response, were presented to the BOD in December 2022. The project evaluation's primary purpose was to foster accountability and generate lessons learned for improving the quality of new and ongoing operations. A secondary purpose was to provide insights for the undertaking of future evaluations, which would also serve as valuable inputs for the development of IEO's evaluation methods and processes.

B. Methodology, Evaluation Questions, and Rating Scale

29. The project evaluation followed internationally recognised evaluation methodologies, criteria, and processes adopted by the Evaluation Cooperation Group of the MDBs and the United Nations Evaluation Group. The evaluation thus examined criteria such as relevance, effectiveness, efficiency, sustainability, and impact (see Annex III). In addition, the Organisation for Economic Cooperation and Development (OECD) has recently included a new evaluation criterion, coherence. This criterion is discussed but not rated since it is still being reviewed by some development organisations and has yet to be formally adopted by the international evaluation community. The evaluation was summative and relied on mixed quantitative and qualitative analysis methods. The evaluation addresses the below key questions (see Annex IV for the complete evaluation framework).

- To what extent does the road upgrading project contribute to socio-economic development through improved connectivity and accessibility for the local populations served?
- Is there evidence of improved living standards and poverty reduction in the project areas due to the project?
- To what extent are the arrangements for private sector performance-based maintenance contracts of the upgraded roads robust and sustainable?
- To what extent have the designs for the upgraded roads improved the levels of road safety?
- To what extent are the road improvements aligned with India's environmental and social regulations?
- To what extent were ethical dimensions incorporated in the design and implementation of the project?
- Were land acquisition and resettlement activities minimal as anticipated at appraisal, and, when required, were they in compliance with national and state regulations?

- Was the results framework sound, and to what extent are the performance indicators monitored?

- To what extent were the project designs, construction processes, operations, and administration efficient?

30. The qualitative analysis depended on the using semi-structured interview questionnaires with key informants, field observations, and relevant project documents. The quantitative analysis drew on secondary data, including data from the project's internal monitoring and evaluation (M&E) system, financial data, and country and sector data from public sources. An essential dimension of the evaluation is to ensure a transparent and coherent evidence trail to confirm that the conclusions are anchored in the findings (and cross-referenced accordingly) and that recommendations are based on the evaluation conclusions. Based on the evidence collected and using triangulation techniques, the evaluation team assigned a performance rating to each evaluation criterion using a six-point scale (see Table 5). In addition, a holistic overall "project performance" rating is also assigned based on the ratings of the individual criteria assessed, excluding the coherence criterion.

TABLE 5

Rating scale[28]

Rating scale	
6	Highly Satisfactory
5	Satisfactory
4	Moderately Satisfactory
3	Moderately Unsatisfactory
2	Unsatisfactory
1	Highly Unsatisfactory

C. Limitations

31. There were limitations to the data available to compare against the baseline survey since some indicators, such as the decrease in poverty levels due to the roads, will only be reflected in future years. Moreover, data gathered by the supervision consultants for each package[29] cannot be verified as part of this report. Another fundamental limitation is the generally weak quality of the Design and Monitoring Framework, which needed to contain some key indicators to track project results. The report discusses this later. Finally, there are attributional issues because some data, such as household income, are also affected by many other factors.

D. Evaluation Phases and Deliverables

32. In a nutshell, the evaluation comprised the following main phases -

Desk Review
The IEO conducted an initial literature review. The reviewed documents included inter-alia, the project appraisal document, the loan agreement, and subsequent amendments, and available

28 Most MDBs use a similar rating scale. Adopting the same scale will facilitate benchmarking the performance of NDB operations with other MDBs in the future.
29 Package 20 still needs to be completed; hence, limited data is available for the same.

PPRs and supervision outputs. It also examined findings on the impact of access and district road improvements on communities elsewhere in India that may be relevant to the project. This phase was in preparation for the fieldwork and culminated in preparing an approach paper outlining the overall evaluation methodology, process, and timelines.

Fieldwork

The evaluation team conducted two field missions to the project site. The first, in July 2022, was for planning the evaluation, while the second, in September 2022, collected data and conducted the initial analysis. The mission teams interviewed key informants as an integral part of the data collection, triangulation, and analysis. In addition, they consulted with key Government (in New Delhi and MP) and NDB personnel, including the newly established India Regional Office (IRO) in Gujarat. Furthermore, the mission travelled to three project sites in MP's Berasia–Narsinghgarh area and collected additional evidence, including interviews with beneficiaries of the project at the local level. They also visited and interviewed staff in the accident response call centre. At the end of the fieldwork, IEO prepared and shared a presentation with its initial findings with key stakeholders for information and comments.

Learning Workshop

IEO organised a stakeholders' workshop in Delhi on December 9, 2022, to discuss the evaluation results, findings, and recommendations. The workshop brought together officials from GOI and GOMP, project authorities, NDB Management and staff, partner organisations, resource persons, and others. The main outputs of the evaluation include the evaluation approach paper, final report, and NDB Management Response. Moreover, a summary of the findings and recommendations is captured in a two-page Evaluation Lens. All these outputs are made available through the IEO web pages.[30]

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30 IEO, NDB https://www.ndb.int/independent-evaluation-office

IV. PROJECT PERFORMANCE

33. Overall, MPRDC's deep experience ensured the delivery of a satisfactory project. The MPMDRP is the seventh road project in 15 years implemented by this PIU. ADB financed the previous six projects and rated four as "successful." The other three (two ADB and the first NDB) are pending completion and/ or an evaluation. The project upgraded existing roads and was rated Category-B; thus, no significant land acquisition or involuntary resettlement was necessary for any of these projects. MPMDRP identified and addressed 130 blackspots (see Table 10) and realignments. The majority were accommodated within the existing rights of way and did not require land acquisition or resettlement.

A. Relevance

Objectives

34. This project was an important part of India's economic growth and poverty reduction as outlined in the GOIs 12th five-year plan, 2012-2017, which promoted inclusive growth and was designed to advance education, agriculture, health, and social welfare.

35. However, the project cannot be assessed against NDB's strategic objectives in India or a sector strategy as it is yet to formulate these. Nevertheless, a global five-year General Strategy highlights the focus on sustainable infrastructure. Transport infrastructure is a crucial area of operation to enhance connectivity between people, markets, and services. The project is aligned with NDB's focus on the "rapidly growing demand for basic infrastructure to reduce poverty and inequality, improve quality of life and expand economic opportunities."[31] The project is consistent with the Madhya Pradesh State Road Development Plan 2013-2033. GOMP has embarked on a programme to upgrade 19,000 kms of major district roads and construct bridges (including overhead railway bridges) to improve connectivity to its rural hinterland. It hopes to accelerate the development of this area through improved access to markets, education, and health centers. More than 8,500 kms are already under construction using Road Fund resources (5,398 kms), state funds (1,134 kms), or schemes involving the private sector (1,992 kms) utilising tolls, Build-Operate and Transfer (BOT) schemes or annuity models. The project was especially relevant because it increased connectivity in a state where road density was only one-third of the national average. As a result, there has been a natural progression from NH to SH and now major district roads. At completion, the project was also in line with the Three-year Action Plan 2020-2022 and the NITI Aayog Annual Report 2021-2022 section on roads, highways, and logistics, which emphasised the importance of alternative sources of revenue from the private sector and the implementation modes of road construction.[32]

36. The final selection process for the road sub-projects depended on several factors (Schedule IV of the Loan Agreement) identified at appraisal. There was also evidence of consultation with local communities, but the consultation process's rigour was unclear. The sub-projects, which grew from 56 to 61, were spread over a wide area (see Project Map in Annex I). The project took cognisance of traffic volumes and development opportunities. Potential climate change impacts were recognised, based on the highest flood level data resulting in taller embankments and better drainage. However, there is no evidence of a systematic assessment of the road segments selected based on the agreed criteria.

31 NDB's General Strategy: 2017-2021 https://www.ndb.int/wp-content/uploads/2017/07/NDB-Strategy-Final.pdf
32 Annual Report 2021-2022, Niti Aayog https://www.niti.gov.in/sites/default/files/2022-02/Annual_Report_2021_2022_%28English%29_22022022.pdf

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Project Design

Components

37. The Project comprised civil work, including contingencies, equipment, supervision, consultancy, and administration. There was no needs assessment of the MPRDC or other project components such as Technical Assistance (TA). Based on recognized good practices, the project team revised the initial cost allocations by category based on actual implementation experience. The Project benefited from a Review of the Environmental and Social Country Framework (India) with MDBs.

Implementation Arrangements

38. GOMP was the executing agency, acting through MPRDC, which the state Government wholly owns. MPRDC's head office is in Bhopal, and a chief engineer with a centralised PIU was in charge of oversight and project control (see Annex V). In addition, the project used field offices for the day-to-day implementation and monitoring of the quality and pace of construction. Again, based on recognised good practices, the project construction contracts had bonus incentives for early completion and penalties for delays. Notably, raw construction materials were available within the project region.

Design Considerations

39. The selection of concrete roads[33] over a bitumen surface for this project was a departure from previous practice. It was neither analysed nor discussed with the GOMP or other policymakers. The appraisal report does not discuss the rationale, pros/ cons, or options.

40. Concrete roads have longer lifespans (up to 30 years) and lower maintenance costs. However, the ride quality of the concrete surface is noisier and rougher than bitumen. Moreover, the construction cost of concrete roads is higher and, in this case, was at least 60% more than for bitumen. This was partly because the existing bitumen road had to be removed before laying the concrete. In addition, the materials cost was higher, and the specialised equipment[34] to lay the concrete had to be provided (in many cases imported) by the contractors. The local contractors

33 An ADB project approved around the same period was primarily constructed using concrete.
34 MPRDC advised that machines bought for cement road construction were utilised for other projects.

had to be skilled in shifting and settling concrete slabs, which could crack if the underlying layer was not perfectly smooth. A 60% premium meant far fewer road lengths were constructed for the price.

41. While the decision to opt for concrete roads in this project is unclear, MPRDC has since reverted to using bitumen for most district roads. They have also opted to use concrete roads in areas of high traffic volume, selected village roads, and areas prone to waterlogging. Concrete is the default option for major highways in India with high traffic volumes, but for lesser trafficked roads, bitumen is preferred. Meanwhile, ADB has produced a useful guide on using concrete pavement technology in developing countries,[35] which could help policymakers for future road projects. Some road stretches traversed areas of black cotton soil. As a result of any differential settlement in these stretches, there was a risk of cracking the concrete pavement. This was to be mitigated by preparing the subgrade with good drainage and laying the pavement with appropriate expansion and construction joints. Geographically, the project's 1,551 kms covered 24 districts, similar in size and extent to earlier district road projects. Roads selected had acceptable rates of return, good prospects of improved connectivity, and were accepted by the local communities. The cost was 60% higher than the previous similar-sized district road project completed two and a half years earlier. However, comparisons are difficult because of various reasons such as inflation, the one-year delay in the completion of the current project, the extent to which the project used rigid pavement, the relative difficulty of constructing some of the sub-sections, and the fact that the project included some measures to ameliorate climate change impacts. Financial management was generally of an acceptable standard, and the M&E framework was appropriate.

Criterion	Rating
Relevance	**Satisfactory**
Relevance of Objectives	Satisfactory
Relevance of Design	Moderately Satisfactory

35 *A Practical Guide to Concrete Pavement Technology for Developing Countries*, ADB, Manilla, December 2021.

B. Effectiveness

Project Outputs[36]

42. The original target for the project was to upgrade 1,500 kms of all-season major district roads to standard intermediate land configuration of at least 1.5 lanes with rigid pavement.

43. The project has upgraded 1,551 kms (see Annex VI for the Project Results Framework), exceeding the initial target at a slightly lower cost.

TABLE 6

Kilometer of roads constructed

Year	Kms
2017-2018	151
2018-2019	567
2019-2020	269
2020-2021	301
2021-2022	246
2022-2023	17
Total	1,551

Source: MPRDC

Project Outcomes[37]

44. As measured by the average daily vehicle-km, in the first year of operation, traffic volume on the newly rehabilitated roads shows an increase of almost 45% compared to a target of 30%. The average increase ranged from 40% for passenger vehicles to 49% increase for commercial vehicles. The increase for agricultural vehicles was 45%.[38] Overall, project outcomes exceeded the target.

36 See Annex VI.
37 See Annex VI.
38 Calculated from data for 25 Packages. Package 20 data is not yet available.

TABLE 7

Project outcomes

Component	Before	After	Change
Average traffic	259	404	56% increase
Average travel time	83 minutes	37 minutes	55% decrease
Average journey speed	21km/hr	52 km/hr	147% increase
Vehicle operating costs	22	14	35% decrease
Average time to reach the primary healthcare centre	52 minutes	28 minutes	46% decrease
Average time to get to major hospital	73 minutes	52 minutes	29% decrease
Cost of transportation to major/ district market[39]	0.60/ Quintal/ kms	0.75/ Quintal/ kms	25% increase
Average time to college/ university	87 minutes	68 minutes	22% decrease
Percentage of BPL population in district	48%	45%	3% decrease

Source: Consolidated data from supervision consultants' reports, MPRDC

45. Outcomes in other areas (see Table 7), including a reduction in travel times (actual reduction of 55% vs. 25% targeted), reduction in fatal road accidents (actual 40% vs. 25% targeted), and vehicle operating costs (actual 35% vs. 25% targeted), also exceeded targets. In addition, the engineering design eliminated 130 blackspots or hazardous locations. MPRDC also has a well-developed Accident Response System (ARS) supported by an accident response centre that monitors more than 6,000 kms of SHs. The centre operates 24x7 and alerts ambulances and firefighters. MPRDC is in the process of expanding the system and integrating MDRs into its design.

i. Road Maintenance

46. The project design envisaged the maintenance and management of all project roads through contracts involving the private sector. This was fully achieved. An innovative feature employed by MPRDC was to ensure that the construction contractor was responsible for the road maintenance for five years following completion. It withheld ten percent of the contract value as a surety, providing an incentive to the contractor high-quality road construction. The contractor is paid one and a half percent of the contract value over the five-year maintenance period. Following these five years, maintenance contracts will be tendered and awarded according to performance-based specifications. The intention is also to include major district roads in the Road Asset Management System (RAMS) currently under development.

ii. Connectivity

47. An inspection of the location map (see Annex I) shows that the improved district roads made substantial improvements in linking with NH and SH, thus enabling faster and cheaper connectivity. The villages along the project roads have a population of over 434,000. These beneficiaries now have better and quicker access to clinics, hospitals, schools, colleges, markets, and businesses (see Table 7).

Criterion	Rating
Effectiveness	**Satisfactory**
Outputs	Satisfactory
Outcomes	Satisfactory

39 The increase in fuel prices likely contributed to this increase.

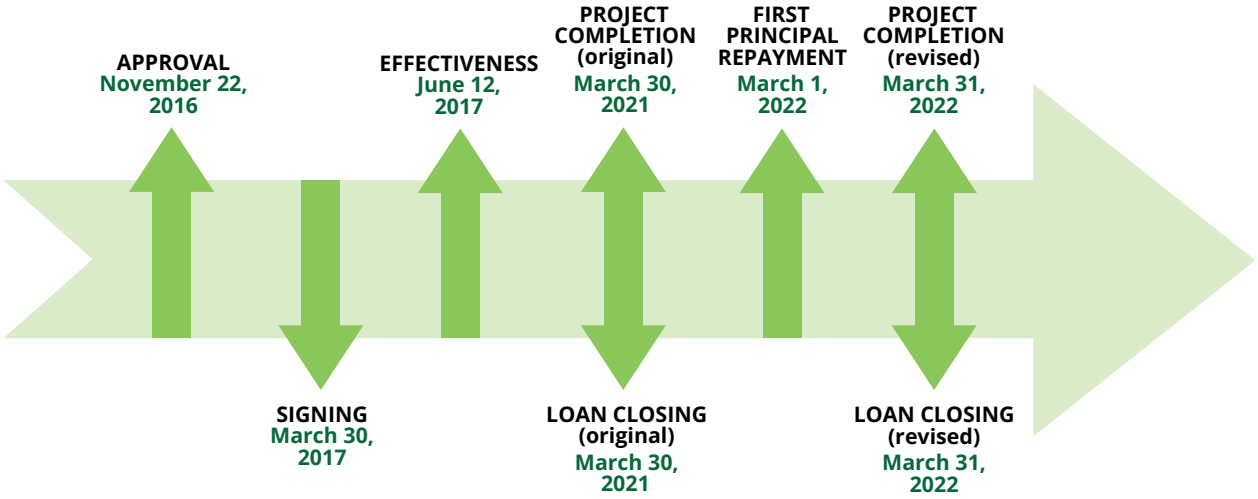
C. Efficiency

Administrative Efficiency

48. As shown in Figure 1, between approval, signing of the loan agreement, and effectiveness, the elapsed time was 202 days, which is the average in India's active NDB sovereign portfolio. According to anecdotal evidence, the delay could be attributed to GOI requiring 30% of the procurement to be in place before signing. While this is a well-meaning requirement expected to expedite project implementation, advance procurement (see Annex VII for list) should be completed in anticipation of project approval. In addition, GOI's legal opinion on the project document could have been faster, avoiding delay in finalising the legal agreement. This delay could be minimised by planning ahead and also avoiding paying commitment fees. GOI has in-depth experience in these matters and could avoid delays. The NDB legal department does not appear to have been pressed to accelerate the process either.

FIGURE 1

Project timeline



Operational Efficiency

49. The project was affected by implementation delays (see Annex X for reasons) in completing most road packages. Four of the 24 packages (at appraisal) were completed ahead of or on time, earning bonuses.[40] The remaining 20 packages were delayed between 211 and 1,112 days (Package 21) compared to the original timeline. The average delay was 639 days. As a result, the project closing date was extended by 12 months.

50. All 24 packages at appraisal were expected to be completed by March 2020, before the onset of the COVID-19 pandemic. However, once the pandemic began to spread, the challenges of labour shortage and supply chain complicated completion further. Some of the common reasons (pre-COVID-19) for delays were problems in receiving approval and permission from various Government departments, changes in the scope of work, shifting of electrical utilities, and adverse climate conditions. The extraordinary delay of package 21 was due to variations in quantities of structure with respect to the Bill of Quantities (BOQ), encountering hard rock during structure excavation, excess rainfall, and force majeure due to the COVID-19 pandemic. There could have been better reporting and action plans in the supervision mission's aide memoires, reinforcing the perception that the missions were too short (see Annex X). For example, the supervision missions could have helped develop realistic and workable solutions to identified issues. The supervision mission should reach an agreement with the borrower and project

40 Packages 1, 6, 12, and 15 were completed before time with respect to the packages at appraisal. In addition, Package 2A also received a bonus.

agencies on the corrective measures, responsible agency, and timeline for implementation. The findings, decisions, actions, recommendations, and remedies should be agreed upon jointly and followed up in subsequent missions, which was not the case in this project.

Planned versus Actual Disbursements

51. Table 8 and Annex IX show the actual annual disbursements of the NDB loan and the cumulative disbursements of both the NDB and the GOMP. While it is standard practice in all other MDBs, there is no disbursement profile in the NDB appraisal document. Thus, it is not possible to compare actual versus projected disbursements. Loan disbursements peaked in 2019 largely due to advance procurement and, to a lesser extent, in 2021 after some implementation issues had been resolved.

TABLE 8

Actual disbursements (USD million)

End date	NDB	GOMP	Total	Cumulative
March 31, 2018	21,375	9,230	30,605	30,605
March 31, 2019	116,840	46,400	163,240	193,845
March 31, 2020	57,730	25,770	83,500	277,345
March 31, 2021	60,385	25,700	86,085	363,430
March 31, 2022	55,355	23,120	78,475	441,905
September 30, 2022	16,050	5,600	21,650	463,550

Source: MPRDC

52. At appraisal, five sub-projects (Table 9) were selected for detailed analysis of technical and economic viability as well as an assessment of the social and environmental aspects of the proposed upgrades.

53. An economic evaluation of the selected sub-projects was carried out based on the standard international practice of comparing, with and without the project, the life cycle costs related to road upgrade and maintenance as well as user costs such as travel time and vehicle operating costs. The Highway Development and Management System (HDM-4) was used for the analysis.[41] Traffic growth rate for projecting the present traffic through the project period was set at 6.5%.

TABLE 9

Sample roads

No.	Road name	Road ID	Lenght
1	**Berasia–Narsinghgarh**	MP-MDR-23-07 and 25-04	17.87 kms
2	**Bheekangaon-Andad Road**	MP-MDR-20-12	18.80 kms
3	**Burhanpur–Nepanagar**	MDR-21-12	38.55 kms
4	**Katargaon–Padlya Road**	MDR-20-09	30.30 kms
5	**Sanawad–Bheekangaon Road**	MDR-20-11	41.20 kms

Source: PDB, MPMDRP

41 HDM-4 is an internationally recognized software package used as a tool for the analysis, planning, and management of road maintenance and road investment decisions.

54. The EIRR for all sample roads exceeded the cut-off value of 12%. The robustness of the EIRR of each sub-project was tested by sensitivity analysis by varying the benefit and cost streams; ten percent cost increase, ten percent decrease in benefits, construction delay of one year, and combinations of these changes. All selected sub-projects showed that the quantified economic benefits were robust. As one of the sensitivity tests was for a one-year delay in project construction, and since this occurred in real-time, the benefits would still exceed the cut-off value. However, since the data to compute the EIRR at completion is unavailable, the economic efficiency is not rated. This would typically be available in the PCR expected in 2023. It is not possible to determine the costs incurred for project management as this needed to be captured in project cost tables and financial reporting. It would have been helpful to have actual figures for the cost percentage invested in project management. Still, a mechanism to set up such a measurement did not take place, and it was not possible to do this retrospectively due to the many activities in which the Management was involved. The average cost of upgrading a kilometer of road in this project was USD300,480. ADB-funded district roads project completed in October 2018 cost USD274,500 per km. However, any comparison should be treated with caution as there were many differences between the two projects. There has been an average inflation of 5.4% per year in the intervening period. The cost per beneficiary of the current project was roughly USD1,067 per person, which is relatively high compared to international benchmarks.

Criterion	Rating
Efficiency	**Moderately Satisfactory**
Administrative Efficiency	Moderately Satisfactory
Operational Efficiency	Moderately Satisfactory

D. Impact

55. Impacts take time to manifest. Therefore, assessing the extent of the overall development impact is premature in this evaluation, especially for indicators such as reduction in poverty levels or improvements in livelihoods. Moreover, data needs to be present at a granular level to ascertain its impacts on specific groups or communities, such as women and youth. Furthermore, the attribution of impacts may not only be due to road development. Hence, a quasi-experimental evaluation, such as an impact evaluation, with counterfactuals would provide more robust evidence of impacts and may be considered in the future.

56. Nevertheless, there was some initial evidence available. Travel time to primary health care centres and hospitals (see Table 7) decreased by up to 46% and 29%, respectively. Improved access to medical facilities for all, including women, may help reduce the high maternal and infant mortality rates. Time taken to reach schools, colleges, and universities declined by up to 22%, which may contribute to increased education outcomes and future opportunities for youth. The project has also seen an increase in average daily traffic volume, a decline in travel time, and an increase in speed.

57. Moreover, the employment of local labourers in road construction saw a 73% increase. There has been a 68% increase in roadside shops, garages, and other establishments. This figure is expected to grow with time. However, improved roads may not be the only reason for establishing the business.

58. Most importantly, there has been an increase in the average monthly incomes of beneficiaries by around 55%, from INR13,500 to 21,000.

59. Although the roads will benefit the agricultural sector by decreasing the time taken for produce to reach markets, this must be weighed against the increasing fuel price on world markets. There was an increase of 25%, although this would have been higher without the project. This is in line with other assessments of rural benefits following improved road access.[42] Finally, a concerted effort was also made to identify blackspots and adjust road designs accordingly. Hence, there has been a reduction in fatal accidents by 40%. Again, caution is recommended as this may not be the only cause of accidents, and police accident records are often questionable.

TABLE 10

Project impacts

Component	Before	After	Change
Average monthly income of the family in the project area (INR)	13,500	21,000	55% increase
Employment of local labourers in road construction	3,717	6,431	73% increase
Number of roadside hotels/ dhabas	306	579	89% increase
Number of roadside shops	1,196	1,793	50% increase
Number of roadside garages/ workshops	297	500	68% increase
Accidents by severity **- Fatal** **- Non-fatal**	 295 1,239	 177 885	 40% decrease 28% decrease
Blackspots	130	0	100% addressed
Total beneficiary population covered	434,280 (village population along the project road)		

Source: Consolidated data from supervision consultants' reports, MPRDC

Criterion	Rating
Impact	**Satisfactory**

E. Sustainability

60. The overwhelming factor in ensuring sustainability is the soundtrack record and institutional capacity of MPRDC and available resources to maintain the assets. MPRDC is responsible for maintaining a network of over 17,000 kms of roads. The private sector maintains almost half of these roads under the Build-Operate and Transfer and similar schemes (tolls, annuities, and performance-based). The GOMP funds maintenance of the remaining 53%. A State Highway Fund was established in 2012, whereby the funds allocated are used primarily for maintaining and repairing roads. MPRDC Managing Director determines the use of these funds.[43] This fund is effectively ring-fenced by the Act of 2012 establishing it. MPRDC is also set to implement the first stage of RAMS. The system will collect data regularly and monitor inter-alia, the asset's age, maintenance frequency, traffic volume, roughness changes, and each link's condition, helping decision-makers allocate resources for cost-effective maintenance on an area-wide basis. An important area of uncertainty is resource availability to expand the system so it covers a majority

42 *Rural Road Development in India.* An Assessment of the Distribution of PMGSY project benefits in three states. South Asia Sustainable Development Unit, World Bank, June 2014.

43 The closing balance of the Madhya Pradesh State Highway Fund was 920 million crores in FY2016, 1,155 million in 2017, 1,600 million in 2018, and 1,948 in 2019. The MPRDC budget for maintenance varies. In FY 2016, it was 2,000 million crores, but more recently, 690 million in FY 2017 and 475 million in FY 2018.

of the road network. The ultimate test is the willingness of the decision-makers to utilise the information from RAMS in allocating adequate resources.

61. The project design also needed to include a transparent exit strategy, which would have further enhanced sustainability prospects. Overall, the sustainability of the investment in district roads is likely, due to the robust institutional arrangements, the introduction (and planned expansion) of the RAMS system, considered best practice internationally, and the adequacy of the funds allocated to roads in the state. Moreover, the participation of private sector operators in the implementation and maintenance of roads is an important dimension, which should also enhance the prospects for sustainability. Finally, selecting the MPRDC as the primary implementing agency should also ensure sustainability, as they are an institutionalised structure within the GOMP.

Criterion	Rating
Sustainability	**Satisfactory**

F. Coherence

62. The project was generally compatible with other road projects carried out nationally and in neighboring states. However, the state needs a multimodal plan for the transport sector. For example, there may be opportunities to link with railway and waterway projects. There also needs to be a plan to ensure the road network is aligned with the National Logistics Policy. The project met international, ethical, and, societal norms and standards but there needed to be more clarity regarding appropriate construction specifications, as indicated in the discussion about whether to use bitumen or concrete. However, MPRDC has accepted that both methods have merit according to the circumstances of each individual road pertaining to terrain, soil conditions, maintenance requirements, cost, and traffic volumes.

G. Compliance

Financial Management and Procurement

63. The NDB loan was for USD350 million, and at closure USD327.7 million had been disbursed. A sum of around USD22.3 million was cancelled. The Government budgeted for USD150 million and expended USD135.8 million. The Government has repaid NDB USD20.7 million (as of September 30, 2022). NDB approved advance procurement in April 2016 to ensure work could commence as soon as the monsoon season ended. 13 packages under civil works and four under construction supervision were earmarked for advance procurement (see Annex VII). In addition, up to ten percent of loan proceeds were eligible for retroactive financing before signing the loan agreement.

64. MPRDC has taken several steps to strengthen its procurement systems. These include a simplified contractor registration system, now only available online. It has also moved to e-tendering, where bid documents are available online, and has begun the practice of opening bids electronically in real-time. The increased transparency has potentially reduced opportunities for rent-seeking and strengthened overall governance. The project appraisal document makes no references to adopting the country systems for procurement and financial management. However, the legal agreement states that "The Borrower shall cause the Project Entity to comply with NDB Procurement Policy (2016, as amended from time to time) and NDB Environment and Social Framework Policy (2016, as amended from time to time)".[44] The NDB Framework Policy states

44 Section 4.4, Loan Agreement, MPMDRP.

that "NDB's procurement policy aims to use the country procurement system with risk-based outcome-focused supervision of the procurement processes based on an assessment."[45]

65. Procurement inputs and risks associated with this project are assessed for the Procurement Performance Assessment Reports at regular intervals. However, no GOI procurement or financial management systems assessment has been conducted at this stage. MPRDC's experience with ADB-financed projects ensured it had the requisite expertise in financial management and procurement of large projects (see Annex VIII for contract details). There were no issues with the availability of counterpart financing, and contractor claims for payment were processed promptly. Regular audits were conducted in a timely fashion and were unqualified. There were no instances of ineligible claims or mis-procurement.

Criterion	Rating
Compliance	Moderately Satisfactory

H. Environmental and Social Safeguards

66. The project was classified as Category-B, and the design envisaged construction works within the existing right of way. Accordingly, the project required no land acquisition or rehabilitation and involuntary resettlement issues for any sub-projects except for minor land requirements related to geometric corrections of alignments near accident blackspots.

67. Project planning and design stages considered potential environmental issues. Mitigation and compensation measures were prepared to be incorporated into the engineering design and implementation. None of the sub-project roads passed through wildlife sanctuaries or habitats of indigenous people. However, cutting and replanting trees would be necessary, and this would be carried out in accordance with "environmental guidelines." An environmental assessment was made for five sample roads and consulted the communities served by these roads. These assessments were used to guide procedures on subsequent sub-projects; each had an environmental management plan (EMP), which was incorporated in the bidding documents. Since the project design avoided forested areas, the felling of trees was avoided or minimal. In the few instances where trees had to be cut, compensatory planting took place, whereby up to 10 times as many trees were planted. Sometimes, where it was impractical to plant at the location where the trees were removed, they were planted nearby. There were also instances where the contractor would assist the local community by providing or shifting an existing water pump or levelling a playing field. The primary environmental parameters for site construction included air quality, noise, water quality, and soil erosion. Meetings were held before and after construction activities with the residents. Flyers were distributed in Hindi, informing the residents of project activities and how they would be affected.

68. More detailed meetings were also held with residents on the five sample road sections chosen at appraisal to obtain appropriate baseline information. Supervision consultants familiar with the sub-region and its people led the consultation process. Workshops were also conducted on hygiene education, disease prevention, and Human Immunodeficiency Virus-Acquired Immuno Deficiency Syndrome (HIV-AIDS) awareness. However, the project appraisal report makes no references to any initial environmental examination conducted that would have been useful in arriving at the classification for the project or informing the EMP. The appraisal report is also unclear on the environmental management requirements but noted that it addresses the GOI and NDB requirements.

45 Paragraph 12, New Development Bank, Procurement Policy.

69. The appraisal document did not detail NDB requirements, including the NDB Environmental and Social Framework document. Hence, MPRDC followed ADB's guidelines with which they were familiar and, at the same time, ensured compliance with GOI. Thus, the project was classified as Category-B[46] according to ADB's Safeguard Policy Statement (2009).

I. Monitoring and Evaluation

70. The project appraisal report did not have an explicit Theory of Change. Still, it did include a Design and Monitoring Framework outlining how the project's activities, outputs, and outcomes met the objectives and contributed to higher-level goals. The Design and Monitoring Framework learns from a similar ADB project. It included measurable results to show changes in average daily traffic volumes, travel times, vehicle operating costs, and travel speed. However, some indicators to measure impacts, such as reduced poverty, improved livelihoods, and improved household incomes, were not easily measurable and subject to attributional issues.

71. Impacts such as the growth in the number of businesses along the roadside were beginning to appear, but these are long-term measures, and new businesses may arise for reasons unrelated to the upgraded road. In general, the Design and Monitoring Framework was not a coherent Results Management Framework, which should be tightly linked to the project design and Theory of Change. Project cost tables did not include budgets for M&E activities.

72. Most importantly, M&E was not used as a key management instrument for making mid-course adjustments or learning or documenting experiences and good practices. In general, little attention was given to knowledge management in the broader sense, which is a missed opportunity, particularly given the operation's general success. The supervision consultants undertook to monitor the work packages. A comprehensive baseline survey was undertaken. However, the progress reports took the indicator values from five sample roads that may not have been representative of the whole upgraded network. For the impact data, the consultation meetings with some communities could have provided more detail to substantiate the evidence.

46 A proposed project is classified as Category B if its potentially adverse environmental impacts on human populations or environmentally important areas--including wetlands, forests, grasslands, and other natural habitats--are less adverse than those of Category A projects. In addition, these impacts are site-specific; few, if any, of them are irreversible, and in most cases, mitigatory measures can be designed more readily than for Category A projects.

V. PROJECT PERFORMANCE

73. Table 11 provides an overarching assessment of "project performance." This is a composite indicator, drawing on the evaluation ratings for relevance, effectiveness, efficiency, sustainability, and impact. Project performance is overall satisfactory, with areas for improvement.

TABLE 11

Summary of evaluation ratings of the MPMDRP

Criteria	IEO rating
Relevance	Satisfactory
Effectiveness	Satisfactory
Efficiency	Moderately Satisfactory
Impact	Satisfactory
Sustainability	Satisfactory
Overall project performance	Satisfactory

Rating scale: 1 = highly unsatisfactory; 2 = unsatisfactory; 3 = moderately unsatisfactory; 4 = moderately satisfactory; 5 = satisfactory; 6 = highly satisfactory

VI. NDB PERFORMANCE

Operational Performance

74. NDB was established seven years ago. MPMDRP was the second BOD-approved project and the first NDB-financed operation supporting the GOI. This project was also one of the first to complete the project cycle from identification to completion. Thus, many operational policies, procedures, and guidelines were still new or under preparation at the time of project preparation. In all likelihood, also, human resources were stretched at the time because of limited capacity. Therefore, the project preparation team benefitted from little guidance, which is understandable given that this project was designed at the very outset of NDB's operations.

Appraisal

75. The appraisal report was concise and showed evidence of some due diligence. However, it appears to have been guided by a similar ADB-designed project and did not offer innovative solutions. It is fair to note that innovation was not given much attention in the Bank's initial years of operation, and project teams did not have incentives to pursue them. More recently, innovation has increasingly become a priority.

76. Nevertheless, the project design was lacking in some important design aspects. For instance, a section on project development objectives, a disbursement profile, the Theory of Change, the use of SMART indicators in the results framework, and a discussion of risks and mitigation measures such as sexual abuse and exploitation, which are normally expected in a project appraisal document, were not present. In addition, there was no discussion on policy issues, sector diagnostics, development partner coordination, or lessons learned. An analysis of these issues may have influenced the project design. The appraisal report needed a section outlining the development objectives and preferably complementing a robust results chain and framework. There were good criteria for road selection in the appraisal document. Still, there was no evidence that such criteria were used to select roads to be rehabilitated/ upgraded. Most importantly, there was no discussion over the viability of concrete roads versus bitumen roads. Concrete roads had yet to be used for district roads.

Supervision

77. The quality of supervision and implementation support was poor. In particular, the aide memoires were superficial and provided little guidance to MPRDC. There were no agreed action plans, and few follow-up steps were evident. This was particularly noticeable in the lack of examination of the reasons for many packages' delays. In addition, there was no project MTR.

78. The project had five NDB PIOs during its implementation period. This high turnover and lack of continuity contributed to weaknesses in supervision, as new PIOs were on a steep learning curve. Moreover, the supervision missions were only 3-4 days.

79. They needed longer to review the operation as such missions thoroughly, including meetings in Bhopal and New Delhi relevant to the project, field trips, and consultations with local-level stakeholders. The composition of the team was also in question. For example, the supervision missions generally comprised 2-3 members, including the PIO. Ideally, the team should include a transport sector specialist, a procurement expert, financial management, monitoring, and evaluation experts, and an environmental and social expert. MPRDC continued to prepare disbursement requests (Statement of Expenditures) through paper mail. These were first sent to New Delhi and subsequently to NDB. However, as in the case of other MDBs, it would also be useful and more efficient for NDB to develop a payment portal, eliminating simple errors. In addition,

a frequently asked questions (FAQ) facility covering project management, procurement, and safeguards could guide MP Government staff.

Strategic Performance

80. At the time of project preparation, the NDB did not have a country strategy/ programme or a diagnostic for the MP transport sector. These documents could have provided the GOI and NDB a sense of direction and reliability while offering an opportunity and being an instrument to coordinate with other development partners. Consultation with GOI, state Governments, and other stakeholders can be accomplished more effectively against a background of periodically prepared country strategy/ programme and sector analyses. Moreover, they provide a framework for NDB-financed projects and programmes. NDB provided financial resources for this project. However, complementing its lending activities with knowledge activities and capacity-building initiatives would have helped in project design and implementation. While more recent projects include components for the capacity building of clients, this project did not have such a provision, despite technical assistance (in design and during implementation) being a key provision in the Bank's Articles of Agreement. A brief sector diagnostic, for example, would have provided a better understanding of the road network links to the NH and the rail network that is almost fully electrified. This may have facilitated the "Roll-on roll-off" system already implemented in India and helped the clean and cost-effective movement of goods and people.

81. Similarly, some TAs to build on the ARS or RAMS would yield long-term benefits. Finally, it is essential to note that although there was a high-level visit from NDB in April 2017, there was no further senior visit until July 2022 (after completion) to engage with GOI officials and development partners on priority policy matters.[47] However, this was when there was no regional office in India.

Criterion	Rating
NDB Performance	**Moderately Unsatisfactory**
Operational Performance	Moderately Unsatisfactory
Strategic Performance	Moderately Unsatisfactory

47 IEO recognises that Bank's approach is not to impose conditionalities on its clients. However, policy engagement is important to support clients and strengthen their sector and thematic policy frameworks.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VII. GOVERNMENT PERFORMANCE

82. The evaluation examines the performance of both the central and state Government. Overall, the Ministry of Finance, particularly the Department of Economic Affairs, provided adequate guidance and support, including chairing TPRMs, facilitating loan disbursement requests, and helping resolve implementation issues. Furthermore, NITI Aayog assisted MPRDC by disseminating good practices and technologies such as building information and modelling (BIM) technology to monitor and fast-track construction work. Finally, MoRTH also serves a vital role in standard setting. Its handbooks, circulars, and guidelines serve as tools for effectively implementing best practices. While it is unclear how this information was internalised and used by MPRDC, they appreciated the support.

83. As mentioned earlier, a portion of the delays prior to effectiveness (i.e., before the date when NDB and GOI agreed that the project implementation would start) may be attributed to GOI requiring 30% of procurement to be in place before signing. This could be reviewed. The time necessary for a legal opinion on the project document could also be expedited. The project clearly benefitted from the experience of a well-staffed and robust MPRDC. MPMDRP was the seventh road project managed by the PIU in 15 years (with a value of USD2.4 billion covering 10,500 kms of the road). The organisation has matured, ensuring a strong maintenance capability and successfully introducing the private sector into construction and maintenance activities using diverse modalities. The tendering systems are well-designed. There was a good system to ensure timely payments to contractors. Advance procurement and retroactive financing ensured project readiness.

84. The development of the RAMS and ARS are creditable efforts to improve the level of service and are worthy of further support. However, there are some areas of deficiency. Despite reasonably well-reasoned and articulated criteria, the system for road selection is opaque. In addition, there needs to be a multimodal strategy and implementation plan that may impact road selection. Furthermore, multiple emergency numbers are likely to confuse citizens, especially during an accident, and may divide scarce resources.[48] Finally, there need to be more mechanisms for axle load management, which severely damages roads[49] if not addressed quickly.

Criterion	Rating
Government Performance	**Satisfactory**

48 The number for police services is 100, ambulance services is 102, and accidents and medical emergency is 1099.
49 One overloaded truck, on average, is equivalent to 60,000 light vehicles passing in terms of road damage.

VIII. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

85. Overall, by promoting access to roads within the broader policy context of the federal and state Governments, the project has strengthened connectivity and improved general livelihoods in MP. It laid the basis for a partnership with the NDB, which has since financed a follow-up project devoted to promoting access to roads in the state. Key determining factors for the project's success, are the PIU's performance and experience and the private sector's involvement as partners in implementation and maintenance. This was the first NDB-funded project in India. Understandably, the project design done in 2016 could not have addressed several development areas identified by this evaluation. Nevertheless, the areas for development merit attention in future and ongoing projects funded by the Bank.

86. Some areas that limited project performance includes the lack of a broader country strategy to guide the India-NDB partnership, insufficient analytic work to inform choices and priorities at design, weak supervision and implementation support and monitoring and evaluation, and limited attention to non-lending activities such as knowledge management and innovation. The quality of the design document and loan agreement could also have been sharper in several aspects and better aligned.

87. Lastly, the frequent changes in the lead NDB PIO and insufficient engagement by senior NDB staff during implementation also limited performance. NDB's decision to establish its India Regional Office in Gujarat with an experienced Director-General is a step in the right direction. However, the office's role moving forward in design, supervision, implementation support,[50] and overall monitoring would require clarity. The recent recruitment of a Principal Professional in the Project Portfolio Management Department is a welcome development to strengthen the function, which will, however, require more staff to support operations in M&E and portfolio monitoring.

New Development Bank

88. **MPMDR project was the first NDB-financed project in India. Overall, it achieved its stated goals.** It has improved around 1,551 kms of road, providing better access and connectivity for over 434,000 people. The project has eliminated 130 road accident black spots and has upgraded roads supported by an accident response centre. The roads will be maintained using proven private sector contractors supported by a strong project agency.

89. **The project design was not informed by sector analysis.** There was no significant sector analysis or needs assessment for TA or other knowledge products required by MPRDC, which may have influenced the project's design and development outcomes. In general, there were several deficiencies with respect to project design and subsequent project supervision and implementation support. The appraisal document lacked details in many respects. Most importantly, it needed analysis and discussion about using concrete over bitumen for the road surface. In addition, the report did not address the potential quantity of accidents due to improved roads, project risks and mitigation measures, axle load management, or asset management after completion.

50 IEO is aware that project implementation is the sole responsibility of the borrowers. However, in line with the Articles of Agreement and the latest General Strategy, this evaluation is of the firm opinion that NDB should provide systematic implementation support to project teams for better outcomes.

90. **The project was affected by start-up delays.** The advance procurement guidelines mandated by the GOI helped ensure the projects began to disburse quickly. However, at the start of this project, there was a significant lapse of time between approval, signing, and effectiveness. The gap between approval and signing was 128 days, signing to effectiveness was 74 days, and approval to effectiveness was 202 days. While this was about the same as the average elapsed time for the active NDB sovereign portfolio in India, the objective should be to emulate the strong performers rather than revert to the mean. Several NDB-financed projects have done well in this regard, and efforts should be made to learn from these[51] for all future projects. Better planning and coordination with the GOI can help achieve shorter elapse times. Moreover, commitment charges begin to accrue 60 days after the date of signing.[52] Hence, reduced elapse times will not only contribute to earlier benefits but also avoid unnecessary costs to the GOI.

91. **Limited attention was paid to supervision, implementation support, project M&E, staff continuity, and knowledge management.** The duration and composition of supervision missions were found to be wanting. Frequent turnover in the designated NDB PIO (who would lead supervision missions) and team composition during the project's life affected continuity. Aide memoires were confined to narrow progress reporting with no agreed steps to address underlying issues. The PIU was offered little substantive implementation support. In addition, there was no project MTR, a significant missed opportunity, as there is ample evidence from other MDBs that MTRs provide a unique opportunity for taking stock, reflecting, and making mid-course corrections for improved outcomes at completion. Knowledge management by the project and NDB received little attention and monitoring, and evaluation needed to be stronger. NDB has accumulated a wealth of lessons and good practices over the last seven years, but these need to be systematically documented and disseminated. Lastly, there needed to be more engagement by high-level NDB officials during the project's implementation period.

92. **While the project is considered overall satisfactory, project efficiency was only moderately satisfactory.** There are several explanatory factors for this, including the high turnover of staff in the NDB responsible for accompanying implementation, delays in implementing activities, the lack of disbursement profiles in the appraisal, and high costs of upgrading the roads. Project efficiency is an area to keep under watch in general, as evidence from other MDBs reveals that a more proactive approach by NDB during design and implementation would lead to enhanced outcomes.

Government of Madhya Pradesh

93. **The project's satisfactory performance can be mainly attributed to MPRDC's experience and expertise in the road sector.** They had effective implementation procedures, such as e-procurement systems, timely payments to contractors, performance-based maintenance contracting, and incentives such as bonuses to ensure that the project's progress continued smoothly with quality construction and easier maintenance after completion. The MPRDC is also making progress in establishing RAMS and an ARS. The RAMS could support policymakers in future decisions related to the preservation of road assets.

94. **MPRDC has undertaken several initiatives to help manage road assets.** It is proposed that RAMS covers 10,000 kms, but at least another 10,000 kms needs to be added to make it effective. Once completed, the RAMS could help resource allocation based on evidence. In addition, outsourcing road maintenance to the private sector through different models is effective.

51 For instance, in 18IN01, 18IN02, 18IN04, 19IN01, 20IN04, and 21IN02 the elapsed time between approval and signing was less than 60 days. Furthermore, in 21IN02, the elapsed time between approval and signing was 48 days. Finally, for 20IN04 and 20IN02 the elapsed time between signing and effectiveness was about a month.

52 Section 3.4 of Loan Agreement; Para 13, NDB Policy on Sovereign Loans & Loans with Sovereign Guarantee https://www.ndb.int/wp-content/uploads/2017/02/Policy-on-Sovereign-Loans-and-Loans-with-Sovereign-Guarantee.pdf

95. **The ARS is an important initiative and helps save lives.** The project included several measures to improve road safety, such as eliminating black spots. The ARS, which operates 24x7, was launched recently and complemented these efforts. It currently covers toll stops on SH and can be extended to a wider network.

96. **There were significant delays in most of the packages.** A majority (20) of the 24 packages were delayed during implementation. These delays were prior to the onset of COVID-19, as the contract completion dates of all the packages at appraisal were before March 2020. However, once extended, it is almost certain that COVID-related issues, such as labour shortages, supply chain issues, etc., contributed to the overall delays.

97. **Good practice suggests a careful analysis of the choice of the road surface.** The choice of concrete or bitumen roads depends on several factors, including traffic volume and potential waterlogging. The MPRDC/ GOMP have historically supported bitumen roads for less trafficked routes. Still, there was a switch to concrete road specifications in the NDB district roads project and a similar ADB project. The rationale for this change needs to be clarified. However, the GOMP is now moving to bitumen or a hybrid design. Meanwhile, this has been inconsistent with MPPWD, which has continued to support bitumen roads. An analysis of the costs and benefits of bitumen versus concrete was lacking in the decision-making process.

98. **Managing axle loads are vital to maintaining assets.** While it is agreed that overloading causes significant damage, there is yet to be a plan to minimise the impact of overloading. The weigh stations are currently on major highways or near state border crossing points. However, enforcement of standards is challenging (at the state and national level) and threatens to damage roads prematurely, increasing maintenance costs.

B. Recommendations

99. This evaluation recognises the limitations of NDB during its formative days. However, the development areas identified should serve as important lessons for future and relevant ongoing projects and programmes. This evaluation presents recommendations reflecting its findings and conclusions. It draws from good practices to inform the way forward.

Recommendations for NDB

Recommendation 1: *Preparation of an India-NDB Country Strategy (Ref. para. 86, 91)*

100. Country strategies inclusive of sector analysis provide a context for individual projects/ programmes to be designed to achieve desired outcomes. While a coherent country strategy and country programme approach would help ground NDB (lending and non-lending) activities, it would also provide predictability and direction to the Government and other stakeholders. In addition, it would help clarify priorities, facilitate coordination and policy engagement with other development partners, and provide strategic directions for operational programming and resource allocation. Complementing country-level planning, sector analysis provides information on the constraints and thus informs project design in addressing the challenges.

101. IEO recommends that an NDB country strategy be prepared for the NDB-India partnership moving forward. Depending on the country's priorities, the strategy should be overarching and all-inclusive. It should operationalise the main elements of NDB's General Strategy. The country strategy would be prepared in consultation with GOI and relevant partners. Such a country strategy would, inter-alia, outline the shared priorities of NDB and India for sector engagement, pipeline development, knowledge and policy activities, partnership development, and other aspects. The country strategy would cover a specific timeframe and be revised thereafter

following an assessment or evaluation of the country programme's results and lessons learned. The preparation of the country strategy would be the place to explore supporting member countries, such as India in this case, through knowledge-related and policy engagement activities complementing lending. This would enable NDB to expand beyond its current role as primarily a project financier, enhancing its more comprehensive development effectiveness. Given its relatively limited human resources, NDB may mobilise short-term support of partner institutions and/ or freelance individuals to conduct the underlying analysis and prepare the country's strategy. Still, the final preparation of the strategy should remain a clear responsibility of the NDB staff[53]. In line with the NDB's Articles of Agreement, the country strategy should be presented to the BOD for consideration, along with written comments by the IEO.

Recommendation 2: *Strengthen Design Quality at Entry (Ref. para. 86, 89)*

102. A solid design document is a fundamental starting point for lasting results. The evaluation recommends reviewing and strengthening project design and related processes and for NDB to be actively involved right from the outset. Project designs should be underpinned by deeper analytical work and build on lessons learned from NDB operations and those of other partners. They should also include exit strategies to improve sustainability and provisions for technical assistance and implementation support during design and project execution. This is indeed a core part of NDB's Articles of Agreement. Finally, in line with the NDB's General Strategy for 2022-2026, more attention should be devoted to designing and implementing knowledge management and innovation for better effectiveness and scaling up impact.

Recommendation 3: *Improve Project Supervision and Implementation Support. (Ref. para 86, 91)*

103. Project supervision and implementation support are critical for successful and sustainable outcomes and impact. NDB should strengthen supervision activities, including time spent in the field, deepen the composition of supervision teams, improve the quality of supervision outputs, and ensure coherent follow-up to supervision recommendations. More continuity needs to be granted to the NDB officer responsible for accompanying project implementation. Moreover, beyond routine project supervision, undertaking a comprehensive MTR should be a regular feature for all projects supported by the NDB. While the executing agency is responsible for project implementation, NDB should offer a greater degree of implementation support to project teams in specific areas (e.g., M&E, financial management, etc.). This would be consistent with NDB's priority for Managing Development Results as per the NDB General Strategy for 2022-26.

104. An internal process of peer reviews could be introduced to strengthen supervision quality and outputs. A guideline for staff on project supervision, including a checklist of good practices, would be helpful in this regard. In due course, NDB should consider developing a corporate policy dedicated to supervision and implementation support, a common feature in other MDBs. On a related topic, this India project evaluation has revealed that it would be helpful for NDB to develop a portal for disbursement requests and self-help guidance tools. The current paper-based system used by NDB is inefficient. In addition to improved speed, an electronic system could perform basic checks obviating opportunities for human error. In addition, NDB should prepare a facility for frequently asked questions accessible by project implementation staff covering inter alia questions on procurement and safeguards. Several MDBs have prepared these documents and could provide useful inputs for NDB.

Recommendation 4: *Enhance Project Monitoring and Evaluation (Ref. para. 86-87, 91)*

105. Project designs should have a dedicated section on M&E plans. Such plans should include a clear statement of objectives, a Theory of Change, and a well-articulated results management framework. The project cost tables should consist of specific budgets for M&E. An M&E officer should be foreseen as part of the project implementation teams so that M&E is used not only as a management tool but also for learning and documenting lessons and good practices.

53 It is worth noting that the preparation of country strategies can be done with limited non-staff costs. For example, IFAD invests about USD20,000-30,000 only to mobilise non-staff resources for the underlying analytic work to prepare its country strategies.

The loan agreements should better capture the project design's main dimensions and include a short article on M&E and NDB project supervision. Robust project-level M&E systems will also contribute to improved knowledge management by NDB and its partners.

Recommendation 5: *Further Articulate the Role of the India Regional Office in the Country Programme Delivery (Ref. para. 87, 91)*

106. The recent establishment of the India regional office offers a welcome opportunity to improve NDB engagement, visibility and results in the country. However, it should also address one of the evaluation's conclusions that high-level NDB officials had limited engagement during project implementation. In line with Strengthening On-the-ground Presence emphasised in NDB's General Strategy, the India regional office's role, responsibilities, and delegation of authority should be clearly articulated. This would cover engagement in design, supervision and implementation support, policy engagement, partnership development, and broader project and portfolio monitoring and related activities.

Recommendations for GOMP

Recommendation 1: *Prepare a Multimodal Transport Strategy/Plan to Support Effective Connectivity (Ref. para. 97)*

107. GOMP should consider preparing a multimodal transport strategy/ plan. The objective of the GOMP is to ensure the cost-effective and efficient movement of goods and people. This may be through roads (NH, SH, MDR, etc.) or other means, including the linkage with different modes such as railways and waterways. The plan should also be aligned with the recently launched National Logistics Policy.

Recommendation 2: *Preserve Assets and Strengthen Road Safety (Ref para. 93-95, 98)*

108. GOMP should continue engaging the private sector in construction and maintenance activities. The innovative means deployed by MPRDC in engaging the private sector to maintain valuable road assets is welcome and effective. It is essential to continue to build on these experiences and expand coverage.

109. Expand the coverage of RAMS. With additional network coverage, RAMS could provide invaluable information to policymakers about the condition of the network and the effectiveness of maintenance operations. This would enable effective engagement and provide a basis for funding, helping decision-makers allocate sufficient resources to safeguard valuable road assets.

110. Take measures to ensure strict enforcement of axle load management. This may be achieved through weigh stations and strict enforcement. Many toll stations have storage facilities nearby, and enforcement needs to go beyond penalties. Higher punitive damages, such as off-loading goods before proceeding, are likely to send clear messages of the Government's intent and incentivise the transporters' behavioural change, leading to preservation of road assets.

111. Expanding the coverage of the ARS would cover more road accidents in a broader network and reduce the time to assist casualties. In addition to expanding the ARS, there is substantial scope to do more to improve road safety. Common causes of accidents on district roads are negligent driving behaviour, excessive speeding, and lack of road safety awareness. Mixed traffic conditions with considerable volumes of two-wheeler traffic and the ingress of animals further aggravate the problem. Reviewing and strengthening driver training may help to reduce accidents in such traffic conditions.

Recommendation 3: *Develop Guidelines for Road Selection and Ensure Enforcement (Ref. para. 97)*

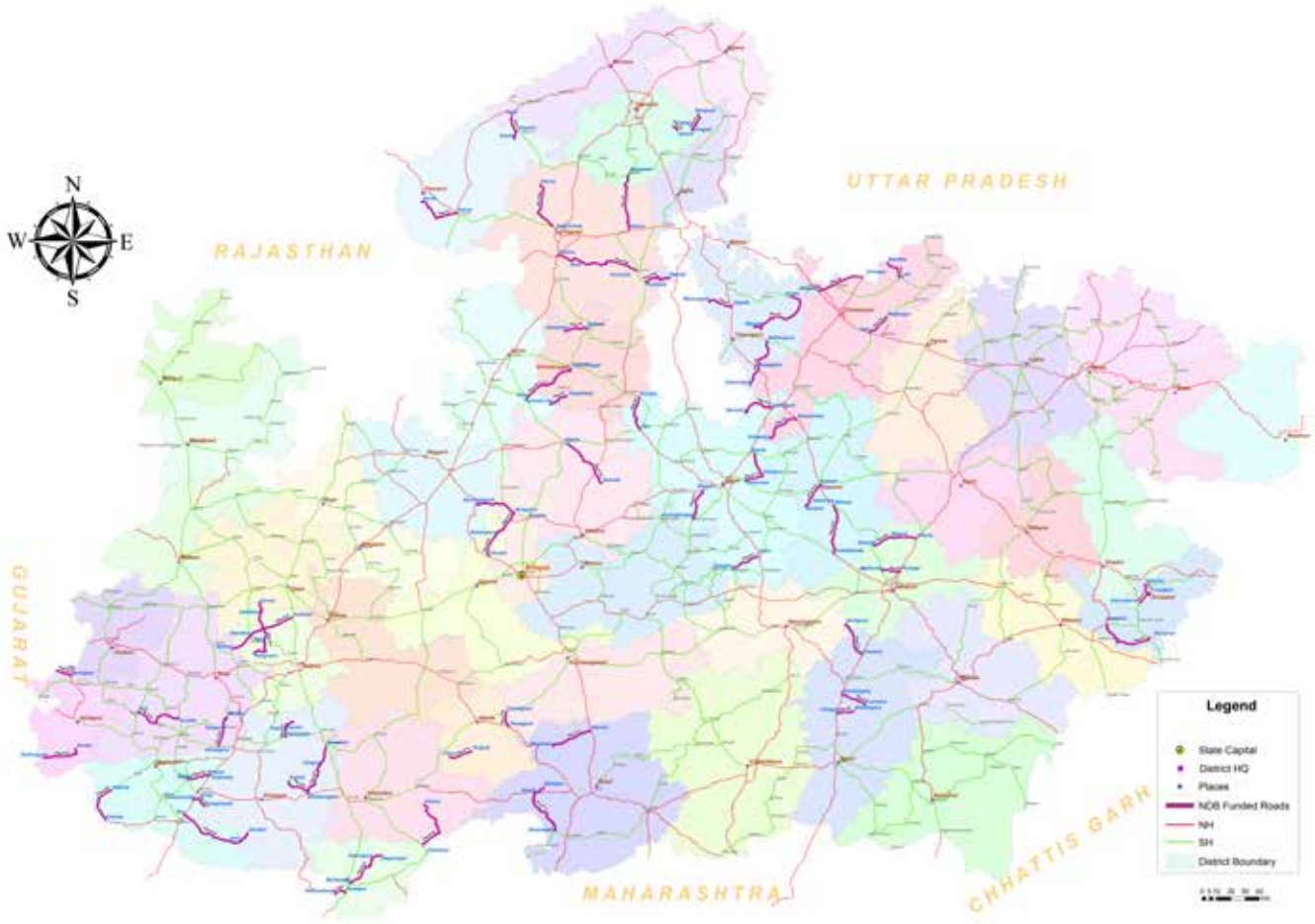
112. Make guidelines for road selection public to ensure transparency. The initial selection criteria identified in the appraisal report for road upgrading and rehabilitation are robust, but their

application is unclear. If the GOMP decides to prepare the multimodal strategy/ plan, these criteria could be included in selecting roads in the future. It would be useful to clarify the circumstances when using concrete instead of bitumen roads is appropriate. In addition, the costs and benefits of bitumen and concrete need to be analysed and formally expressed to help in the decision-making process.

ANNEXES

Annex I: Map of the project area

M. P Major District Roads
Upgradation Project (MPMDRUP)



Annex II: Project data

Project country/name	**India: Madhya Pradesh Major District Roads Project**			
Loan number	16IN02			
Sector and subsector	Transport	Road transport		
Safeguard categories	Environment	B		
	Involuntary resettlement	B		
			Approved (USD million)	**Actual at close[1] (USD million)**
NDB financing (USD million)	Project finance facility: 350	Total Project Cost	500	463.55
		Loan	350	327.74
		Borrower	150	135.82
Co-financiers	-	Total co-financing	-	-
Approval date	22/11/2016	**Signing date**	30/3/2017	-
Effectiveness date	12/6/2017	**Closing date**	31/3/2021	31/3/2022

Restructuring and/or additional financing	
Dates	**Reasons for revision:**
October 17, 2017	Amendment 1: Clarification of drawdown requests, interest payments, and documentation for approval.
March 31, 2021	Amendment 2: Extension of closing date to March 31, 2022

[1] GOI allows disbursements until six months after close. Therefore, total actual NDB loan disbursements increased to USD327.740 million by September 30, 2022.

Annex III: Definition and rating of the evaluation criteria used by IEO

Criteria	Definition
RELEVANCE **Is the intervention doing the right things?**	The extent to which the intervention objectives and design respond to beneficiaries, global, country, and partner/ institution needs, policies, and priorities, and continue to do so if circumstances change. Beneficiaries are defined as "the individuals, groups, or organizations, whether targeted or not, that benefit directly or indirectly, from the development intervention." Other terms, such as rights holders or affected people, may also be used.
COHERENCE **How well does the intervention fit?**	The compatibility of the intervention with other interventions in a country, sector, or institution. The extent to which other interventions (particularly policies) support or undermine the intervention, and vice versa. Includes internal and external coherence: internal coherence addresses the synergies and interlinkages between the intervention and other interventions carried out by the same institution/ Government, as well as the consistency of the intervention with the relevant international norms and standards to which that institution/ Government adheres. External coherence considers the consistency of the intervention with other actors' interventions in the same context. This includes complementarity, harmonisation and coordination with others, and the extent to which the intervention adds value while avoiding duplication of effort.
EFFECTIVENESS **Is the intervention achieving its objectives?**	The extent to which the intervention achieved, or is expected to achieve, its objectives and results, including any differential results across groups. Analysis of effectiveness involves taking account the relative importance of the objectives or results.
EFFICIENCY **How well are resources being used?**	The extent to which the intervention delivers, or is likely to deliver, results in an economical and timely way. "Economic" is the conversion of inputs (funds, expertise, natural resources, time, etc.) into outputs, outcomes and impacts, in the most cost-effective way possible, as compared to feasible alternatives in the context. "Timely" delivery is within the intended timeframe or a reasonably adjusted to the demands of the evolving context. This may include assessing operational efficiency (how well the intervention was managed).
IMPACT **What difference does the intervention make?**	The extent to which the intervention has generated or is expected to generate significant positive or negative, intended or unintended, higher-level effects. Impact addresses the ultimate significance and potentially transformative effects of the intervention. It seeks to identify the intervention's social, environmental, and economic effects that are longer-term or broader in scope than those already captured under the effectiveness criterion. Beyond the immediate results, this criterion seeks to capture the intervention's indirect, secondary and potential consequences. It does so by examining the holistic and enduring changes in systems or norms and possible effects on people's well-being, human rights, gender equality, and the environment.
SUSTAINABILITY **Will the benefits last?**	The extent to which the net benefits of the intervention continue or are likely to continue. Includes an examination of the systems' financial, economic, social, environmental, and institutional capacities needed to sustain net benefits over time. Involves analyses of resilience, risks, and potential trade-offs. Depending on the timing of the evaluation, this may include analysing the actual flow of net benefits or estimating the likelihood of net benefits continuing over the medium and long term.

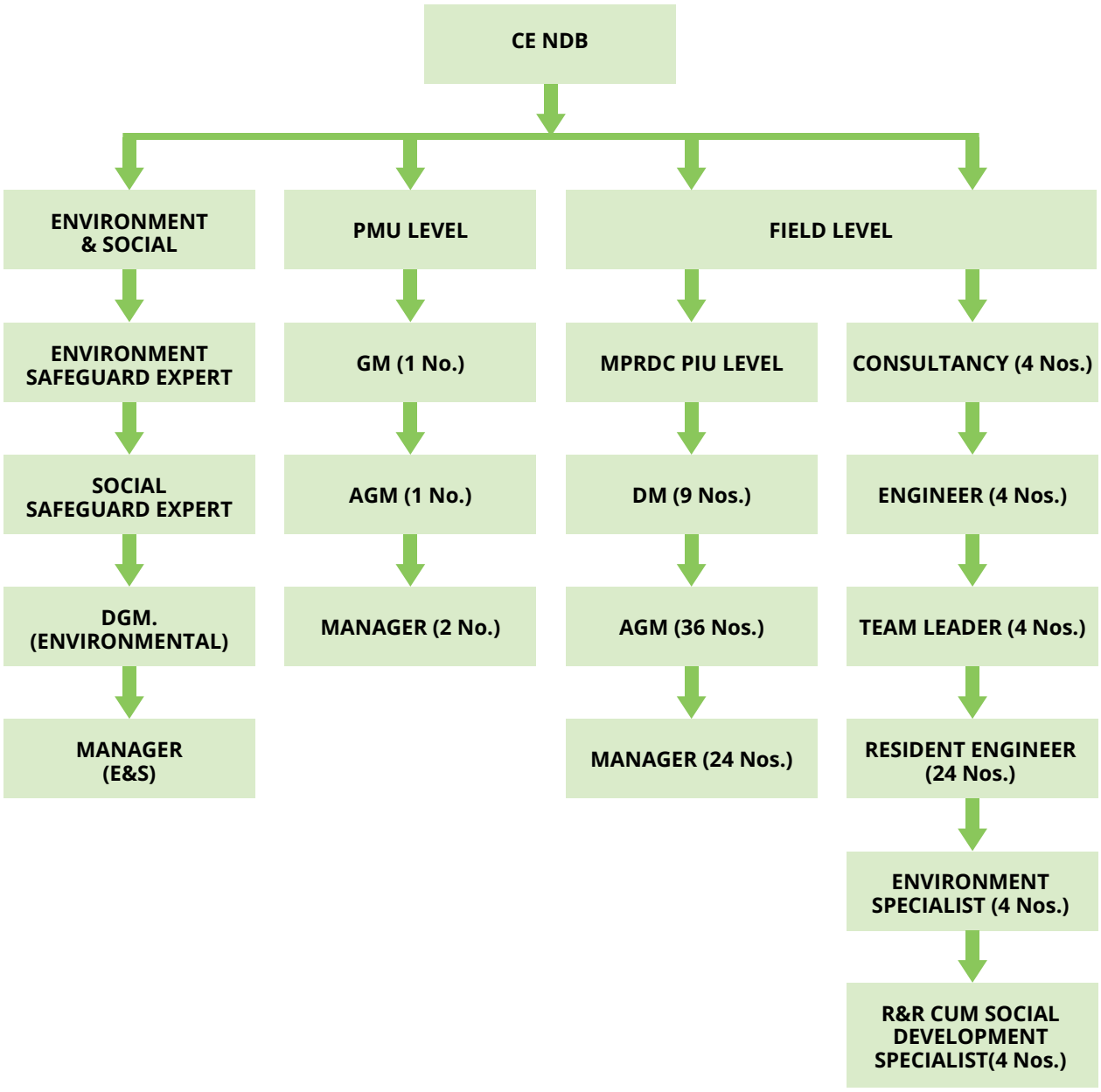
* These definitions build on the Organisation for Economic Cooperation and Development/ Development Assistance Committee (OECD/ DAC)

Annex IV: Evaluation framework

Evaluation criteria	Evaluation questions	Sources
RELEVANCE	To what extent was the project relevant to the national and state policies and plans?	Stated policies and plans; interviews with officials.
	To what extent was the project relevant to local community needs and interests?	Stated policies and plans; interviews with community members.
	Was the project design relevant to best practices appropriate for district roads and their maintenance?	Policies and plans. Consultation with design experts.
COHERENCE	Were the project objectives compatible with other interventions carried out nationally, at the state level, and locally?	Perusal of relevant policy documents and scrutiny of other projects in the area.
	Was the project intervention in line with societal and international norms and standards?	Review of project in the context of stated societal and international norms and standards.
	To what extent were ethical dimensions incorporated in the design and implementation of the project?	Review of design and implementation in the context of stated and inferred ethical issues.
EFFECTIVENESS	To what extent have the roads been completed as envisaged?	Physical inspections, implantation reports and interviews with relevant staff.
	To what extent have the designs of the upgraded roads improved the levels of road safety?	Review of baseline and data and data collected during implementation, interviews with road safety staff.
	To what extent are the road improvements alined with India's environmental and social regulations? Was land acquisition and resettlement minimal as anticipated at appraisal?	Review of regulations and safeguards pertinent to the project, interviews with staff and community members.
	Has the project met its design objectives for allseason roads and improved road safety?	Comparison of design objectives with weather events and discussions with users and maintenance staff.
	Has the project improved the quality of road maintenance and asset management?	Physical inspections, results data, discussions with maintenance contractors and agency staff.
	Has the project improved connectivity in the project areas?	Analysis of traffic before and after project. Discussions with users and beneficiaries.
	Has the project increased transport capacity and improved access to economic, social, and educational centres for the affected population?	Analysis of results data. Discussions with users and beneficiaries.

Evaluation criteria	Evaluation questions	Sources
EFFICIENCY	What was the project's economic and (if applicable) financial return?	Comparative economic and financial data.
	Was the results framework sound, and to what extent are the performance indicators being monitored?	Review of results framework, implementation and effectiveness of performance indicators.
	To what extent were the project designs, construction processes, operations, and administration activities efficient?	Onsite inspections, interviews with staff and community members.
	What was the proportion of project management costs and overheads compared to investment costs?	Perusal of relevant documentation and discussions with financial management staff.
	Was the project's disbursement performance in line with appraisal estimates?	Perusal of relevant documentation and discussions with financial management staff.
	Was the project implemented within the timelines estimated at design?	Perusal of relevant documentation.
	To what extent did the project's procurement and contracting arrangements facilitate project delivery?	Assessment of processes and discussions with appropriate staff.
IMPACT	To what extent does the project contribute to socio-economic development through improved connectivity and accessibility for the local populations served?	Review of baseline and collected data, interviews with affected parties. Evidence from similar projects.
	Is there evidence of improved living standards and poverty reduction in the project areas due to the project?	Review of statistics relevant to the project and field evidence.
	Is there evidence of travel time savings for the local communities?	Review of travel time data and interviews with beneficiaries.
	Is there evidence of improvements in road safety?	Review of accident data before and after the project.
	What are the effects of removing hazardous locations, and how effective is the accident response system?	Review of accident data before and after the project. Discussions with users and road safety experts.
SUSTAINABILITY	To what extent are the arrangements for private sector performance-based maintenance contracts of the upgraded roads robust and sustainable?	Review of progress on similar relevant projects.
	How sound is the road sustainability strategy followed in MP?	Consideration of the current strategy in the light of comparative strategies that could be followed. Discussions with experts.
	What is the capacity of the main institutions and engineers for delivery?	Discussions with relevant staff/management and comparison with international norms.
	To what extent is funding available for future road maintenance? Is the SH Fund generating sufficient funds for road maintenance?	Analysis of road maintenance funding plans, budgets and projections. Discussions with officials. Analysis of projected.

Annex V: Project implementation arrangements



Annex VI: Project design and monitoring framework

Design summary	Performance targets/indicators	Reporting mechanism	Assumptions and risks	Project achievements
IMPACT Improved connectivity of the interior regions with district headquarters and state road network	By 2020, an additional 1,500 kms of MDRs will have been upgraded to standard, intermediate lane configuration with rigid pavement.	MPRDC through project progress reports and post-implementation reports	**ASSUMPTIONS** Upgrading MDRs and thereby improving and integrating these into the state road network will be the state Government's focus.	1,551 kms of roads upgraded in 24 districts across MP.
			RISK Future funding constraints for asset maintenance beyond five years due to other competing social demands.	
OUTCOME Improved transport connectivity to the interior regions and the resultant boost to economic activity in the rural hinterland	By 2019: Traffic on the newly rehabilitated MDRs as measured by average daily vehicle-km in the first full year of operation will have increased by 30% compared to 2016.	Post-implementation monitoring and reporting by MPRDC and accident data collected from police	**ASSUMPTIONS** Assured funding and appropriate mechanisms for road asset maintenance. Strict enforcement of traffic laws and regulations.	Average daily traffic on the project roads increased by 56%.
	Average travel time on the project roads will be reduced by 25% from the present 2.5 minutes per km.		**RISK** State Government is unable to fund road asset maintenance in a sustained manner and unable to enforce strict discipline on road users.	Average travel time was reduced by 55%.
	Vehicle operating cost (economic) on project roads will be reduced by 25% from the present INR10/ km for cars and INR23/ km for medium trucks.			Vehicle operating costs decreased by 35%.
	Fatal road accidents on project roads will be reduced to less than 25 per year from 30 per year.			Fatal road accidents on the project roads were reduced by 40%.

Design summary	Performance targets/indicators	Reporting mechanism	Assumptions and risks	Project achievements
OUTPUTS Upgraded Major District Roads	About 1,500 kms of MDRs upgraded to intermediate lane width (5.5m wide carriageway of rigid pavement with 2.25 m of earthen shoulders on either side i.e., total formation width of 10 m), with all-weather access, proper signage, pedestrian crossings and other road safety features.	MPRDC project progress reports	**ASSUMPTIONS** The project is executed within the stipulated timeframe and within the estimated project cost. In addition, MPRDC ensures availability of adequate qualified staff for project implementation and continued road asset maintenance and management.	1,551 kms of roads upgraded to intermediate lane width (5.5m wide carriageway of rigid pavement with 2.25 m of earthen shoulders on either side, i.e., total formation width of 10 m), with all-weather access, proper signage, pedestrian crossings, and other road safety features.
	Upgraded MDRs integrated into MPRDC's accident response system.		**RISK** Delays in the award of contracts and project implementation.	
Improved and reliable road asset management and maintenance system	Road asset maintenance & management of all project roads will be carried out through performance-based PPP contracts.	PPP contracts for road maintenance awarded		

ACTIVITIES WITH MILESTONES

Output 1:
Major district roads upgraded, rehabilitated, or reconstructed to intermediate lane all-weather standards and road safety features.

1.1 Prepare baseline data of traffic and other socio-environmental indicators for impact measurement before submitting the sub-project road to NDB

1.2 Environmental and Social Safeguards, statutory clearances ready before submitting sub-project road to NDB

1.3 Construction supervision consultant mobilised by Q4 2016

1.4 Award of the first batch of construction contracts by Q1 2017

1.5 Award of all construction contracts by Q4 2017

1.6 Complete all construction contracts by Q1 2021

1.7 Integrate project roads (1,500 kms) into MPRDC-developed ARS by Q1 2021

1.8 Post-implementation evaluation and measurement of indicators by Q2 2021

Output 2:
Improved road asset maintenance and management

2.1 Award performance based PPP-contracts for road assets management by Q2 2021

2.2 Approved financial framework for road assets management by Q1 2020

Input
NDB loan: USD350 million
GOMP co-financing: USD150 million

Annex VII: Advance procurement (amounts in INR million)

Civil works contracts

No.	Contract No.	Package	Date of publication of notice for inviting bids	Date of letter of award	Date of contract signing	Estimated contract value	Awarded contract value
1	303/2017	1	September 20, 2016	March 21, 2017	April 25, 2017	2366.7	2148.9
2	325/2017	2	September 20, 2016	March 21, 2017	June 16, 2017	1865.7	1754.9
3	305/2017	4	September 20, 2016	March 21, 2017	April 19, 2017	2845.4	2626.3
4	328/2017	9	November 18, 2016	May 3, 2017	June 24, 2017	1041.0	972
5	316/2017	11	September 20, 2016	March 21, 2017	May 24, 2017	1788.2	1709.9
6	329/2017	13	November 18, 2016	May 3, 2017	June 28, 2017	1727.4	1679.7
7	315/2017	14	September 20, 2016	March 21, 2017	May 19, 2017	904.7	793.6
8	327/2017	16	November 18, 2016	May 3, 2017	June 24, 2017	1254.2	1084.9
9	306/2017	18	September 20, 2016	March 21, 2017	April 24, 2017	991.3	862.5
10	311/2017	21	September 20, 2016	March 21, 2017	May 12, 2017	1964.7	1826.4
11	330/2017	22	November 18, 2016	May 3, 2017	June 30, 2017	1412.3	1263.3
12	334/2017	23	November 18, 2016	May 3, 2017	July 22, 2017	1117.8	1018.3
13	326/2017	24	November 18, 2016	May 3, 2017	June 23, 2017	2132	1984.3
Total						**21411.4**	**19725**

Construction supervision contracts

No.	Contract package No.	Name of related sub-project	Date of publication of notice for inviting bids	Date of letter of award	Date of contract signing	Estimated contract value
1	292/2017	Package-1 (Gwalior)	July 22, 2016	January 23, 2017	February 27, 2017	205.4
2	302/2017	Package-2 (Jabalpur)	July 22, 2016	March 9, 2017	March 23, 2017	117.1
3	298/2017	Package-3 (Bhopal)	July 22, 2016	February 14, 2017	March 16, 2017	128.6
4	280/2017	Package-4 (Indore)	July 22, 2016	January 7, 2017	January 27, 2017	194.2
Total						**645.3**

Annex VIII: Summary of civil works and construction supervision contracts

Summary of civil works contracts (amounts in INR million)

Package No.	Contractor	Road name	Length (in kms.)	Procurement method	Date of contract signing	Awarded contract value	Actual cost	
							Total	NDB funding
1	M/s Gawar Construction Ltd.	1. Degoda Mohangarh Road (MP-MDR-34-07) 2. Badagaon-Kakarwaha Road (MP-MDR-34-09) Majna-Palera Road (MP-MDR-34-08) 3. Badagaon-Baldeogarh Road (MP-MDR-34-06)	119,247	Single stage two envelope	April 25, 2017	2148.9	2391.2	1745.6
2	M/s IL&FS Transportation Networks Ltd. and M/s IL&FS Engineering and Construction Company Ltd. (JV)	1. Ganj-Rajnagar Road (MP-MDR-35-02) 2. Laundi-Mahoba Road (MP-MDR-35-11) 3. Nawgong-Shrinagar Road (Mp-MDR-35-04) 4. Baxwaha-Dalpatpur Road (MP-MDR-35-18)	90,186	Single stage two envelope	June 16, 2017	1754.9	-	-
2A	M/s Madhav Infra Projects Ltd.	1. Ganj-Rajnagar Road (MP-MDR-35-02) 2. Laundi-Mahoba Road (MP-MDR-35-11) 3. Nawgong-Shrinagar Road (MP-MDR-35-04) 4. Baxwaha-Dalpatpur Road (MP-MDR-35-18)	90,186	Single stage two envelope	June 1, 2020	1705.6	1840.2	1343.3
3	M/s Tomar Builders & Contractors Pvt. Ltd.	1. Tetra Vijaypur Iklodh Road (MP-MDR-04-10) 2. Goras Aawada Ajapura Road (MP-MDR-04-07) 3. Iklod Tiraha to Gandhi Chouk City Portion Vijayour (SH-45 Part)	44,534	Single stage two envelope	September 26, 2018	1054.1	1177.7	859.7
4	M/s Gannon Dunkerley & Co. Ltd.	1. Pichor Basayi Road (MP-MDR-07-03) 2. Karera Bhitarvaar Road (MP-MDR-07-05) 3. Singhnivaas Khurai Road (MP-MDR-07-17) 4. Padora Gora Pichhore Road (MP-MDR-07-09)	141,927	Single stage two envelope	April 19, 2017	2646.5	-	-
4A	M/s Diamond Construction Company	1. Padora Gora Pichhore Road (MP-MDR-07-09) 2. Pichhore Basayi Road (MP-MDR-07-03)	73,592	Single stage two envelope	January 21, 2021	1252.1	1431.8	1045.2
4B	M/s Tomar Builders & Contractors Pvt. Ltd.	1. Singhnivaas Khurai Road (MP-MDR-07-17)	36,840	Single stage two envelope	March 12, 2021	481.1	489.8	357.6
4C	M/s Gawar Construction Ltd.	1. Karera Bhitarwar Road (MP-MDR-07-05)	31,495	Single stage two envelope	January 21, 2021	657.3	651.3	475.4

Package No.	Contractor	Road name	Length (in kms.)	Procurement method	Date of contract signing	Awarded contract value	Actual cost	
							Total	NDB funding
5	M/s B. Patel Infrastructure Pvt. Ltd. and Ketan Construction Ltd. (JV)	1. Singhpur-Gijorra Road (MP-MDR-01-04) 2. Rangava–Deogarh Road (MP-MDR-01-21)	22,834	Single stage two envelope	September 27, 2018	387.7	259.4	189.4
6	M/s Gawar Construction Ltd.	1. Aron-Ashoknagar Road (MP-MDR-06-05) 2. Bharoli-Ajleshwar Road (MP-MDR-08-20) 3. Hapakhedi-Panwadi hat Road (MP-MDR-08-17)	47,910	Single stage two envelope	February 27, 2018	902.6	843.4	615.7
7	M/s Gawar Construction Ltd.	1. Anooppur Chechai Amlai Road (MP-MDR-47-07) 2. Anooppur Darri Kherwa Road (MP-MDR-47-03) 3. Nonghati Damedi Devri Leelatola Road (MP-MDR-47-09)	76,600	Single stage two envelope	October 9, 2017	1524.8	1526.1	1114.1
8	M/s Gour Road Tar Coat Pvt. Ltd.	1. Panagar Belkhadu Road (MP-MDR-36-14) 2. Sihora Majauli Katav Road (MP-MDR-36-01)	31,550	Single stage two envelope	February 2, 2018	586.6	651.9	475.9
9	M/s Gannon Dunkerley & Co. Limited	1. Dhooma Gotegaon Road (MP-MDR-37-04) 2. Ganeshganj Sunwara Kewlari Pindrai Road (MP-MDR-37-13) 3. Kewlari Bheemgarh Chhapara Road (MP-MDR-37-14)	47,590	Single stage two envelope	June 24, 2017	972	1051.4	767.5
10	M/s Prakash Asphalting & Toll Highways India Ltd.	1. Damoh-Jamuniya-Balakot Road (MP-MDR32-13) 2. Abhana-Tendukheda Road (MP-MDR-32-04)	52,580	Single stage two envelope	June 29, 2018	1257.3	1498.8	1094.1
11	M/s KCC Buildcon Pvt. Ltd.	1. Deori-Sahajpur Road (MP-MDR-31-09) 2. Pali-Peerghat-Khimlasa-Kanjiya Road (MP-MDR-31-25) 3. Bhapel-Jaisinagar Road (MP-MDR-31-28)	82,874	Single stage two envelope	May 24, 2017	1709.9	1959.6	1430.5
12	M/s Diamond Construction Company and M/s Gawar Construction Ltd. (Gawar-DCC) (JV)	1. Shahgarh Baraytha Road (MP-MDR-31-18) 2. Banda Shahpur Parsoriya Road (MP-MDR31-27)	57,370	Single stage two envelope	September 20, 2018	1079.5	1155.1	843.2
13	M/s KCC Buildcon Pvt. Ltd.	1. Bhainsdehi Nanda Bhimpur Road (MP-MDR-28-04) 2. Bhoura Phophalya Road (MP-MDR-28-16)	78,884	Single stage two envelope	June 28, 2017	1679.7	1832.2	1337.5

Package No.	Contractor	Road name	Length (in kms.)	Procurement method	Date of contract signing	Awarded contract value	Actual cost	
							Total	NDB funding
14	M/s Bansal Construction Works Pvt. Ltd. and Prakash Asphaltings & Toll Highways (India) Ltd. (JV)	1. Basoda Sironj Road (MP-MDR-27-03)	42,000	Single stage two envelope	May 19, 2017	793.6	848.9	619.7
15	M/s Gawar Construction Ltd.	1. Chhindgaon temagaon Road (MP-MDR-29-08) 2. Sirali charua road (MP-MDR-29-06)	28,720	Single stage two envelope	January 22, 2018	598.6	622.4	454.4
16	M/s Madhav Infra Projects Limited and Eagle Infra India Ltd. (JV)	1. Berasia Narsinghgarh Road (MP-MDR-23-07) 2. Narsingarh Berasia Road (MP-MDR-25-04) 3. Bhojapura Ahmedpura Road (Part 1) (MPMDR-23-09) 4. Bhojapura Ahmedpura Road (Part 2) (MPMDR-26-06) 5. Doraha-Ahmedpur Road (MP-MDR-26-05)	56,450	Single stage two envelope	June 24, 2017	1084.9	1222.5	892.4
17	M/s Gannon Dunkerley & Co. Ltd.	1. Rangwasa-Agra-Girota Road (MP-MDR-15-09) 2. Depalpur-Kaisur Road (MP-MDR-15-10) 3. Sanwer-Ajnod-Depalpur Road (MP-MDR-15-11) {2nd Call}	104,385	Single stage two envelope	September 26, 2017	1882.2	2097.4	1531.1
18	M/s Madhav Infra Projects Ltd. and M.S. Khurana Engineering Ltd. (JV)	1. Khalwa-Dedatalayi Road (MP-MDR-19-22)	41,470	Single stage two envelope	April 24, 2017	862.5	915.1	668
19	M/s Madhav Infra Projects Ltd.	1. Maalpoor Varchar Mandur Road (MP-MDR-18-12) 2. Sonda Sakdi Umraeth Bakhatgarh Road (MP-MDR-18-14)	43,080	Single stage two envelope	September 22, 2018	699.5	934.2	682.0
20	M/s Sorathia Velji Ratna & Co. and M/s Ketan Construction Ltd. (VRS-KCL) (JV)	1. Balsamundh Ochar Nangalwadi Bistaan Road (MP-MDR-22-13) 2. Pati Vokarta Khetiya Road (MP-MDR-22-02)	44,660	Single stage two envelope	September 26, 2018	1282.5	1770.1	1292.2
21	M/s GHV (India) Pvt. Ltd.	1. Katargaon-Karhi-Pandiya (MP-MDR-20-09) 2. Sanawad-Dhalgaon-Hirapur-Bheekangaon Road (MP-MDR-20-11) 3. Bheekangaon-Kendwa-Shankargaon-Khudgaon-Angad Road (MP-MDR-20-12)	90,300	Single stage two envelope	May 12, 2017	1826.4	1737.2	1268.2

Package No.	Contractor	Road name	Length (in kms.)	Procurement method	Date of contract signing	Awarded contract value	Actual cost	
							Total	NDB funding
22	M/s Shreeji Infraspace Pvt. Ltd. and Ketan Construction Ltd. (SIPL-KCL) (JV)	1. Avalda Bag Jobat Borjhar Road (MP-MDR16-05) 2. Dhrampur Tarapur Mandav Road (MPMDR-16-14)	61,810	Single stage two envelope	June 30, 2017	1263.3	1572.5	1147.9
23	M/s Rajendra Singh Kiledar Constructions Pvt. Ltd. and M/s Barbrik Project Ltd. (RSKC-BPL) (JV)	1. Shahpur-Nachan Kheda Road 2. Burhanpur Bori Borsal Ratangarh Saikheda Nepanagar Road	49,350	Single stage two envelope	July 22, 2017	1018.3	1179.4	861.0
24	M/s GHV (India) Pvt. Ltd.	1. Goi kavri Dhulkot Road (MP-MDR-22-06) 2. Rajpur Vipri Khajuri Badsalay Road (MPMDR-22-10)	94,580	Single stage two envelope	June 23, 2017	1984.3	1962.9	1432.9

Summary of civil works contracts (amounts in INR million)

Package	Contractor No.	Consultant	Procurement method	Date of contract signing	Awarded contract value	Final contract value
Package 1 (Gwalior)	292/2017, Amendment no. 320/2017	M/s L.N. Malviya Infra Projects Pvt. Ltd.	Single stage two envelope	February 27, 2017	2.054	3.212
Package 2 (Jabalpur)	302/2017	M/s Aarvee Associates Architects Engineers & Consultants Pvt. Ltd.	Single stage two envelope	March 23, 2017	1.171	2.379
Package 3 (Bhopal)	298/2017	M/s Highway Engineering Consultants	Single stage two envelope	March 16, 2017	1.286	2.649
Package 4 (Indore)	280/2017	M/s Bloom Companies LLC	Single stage two envelope	January 27, 2017	1.942	3.703

Annex IX: Actual disbursements

Figure 2: NDB disbursements

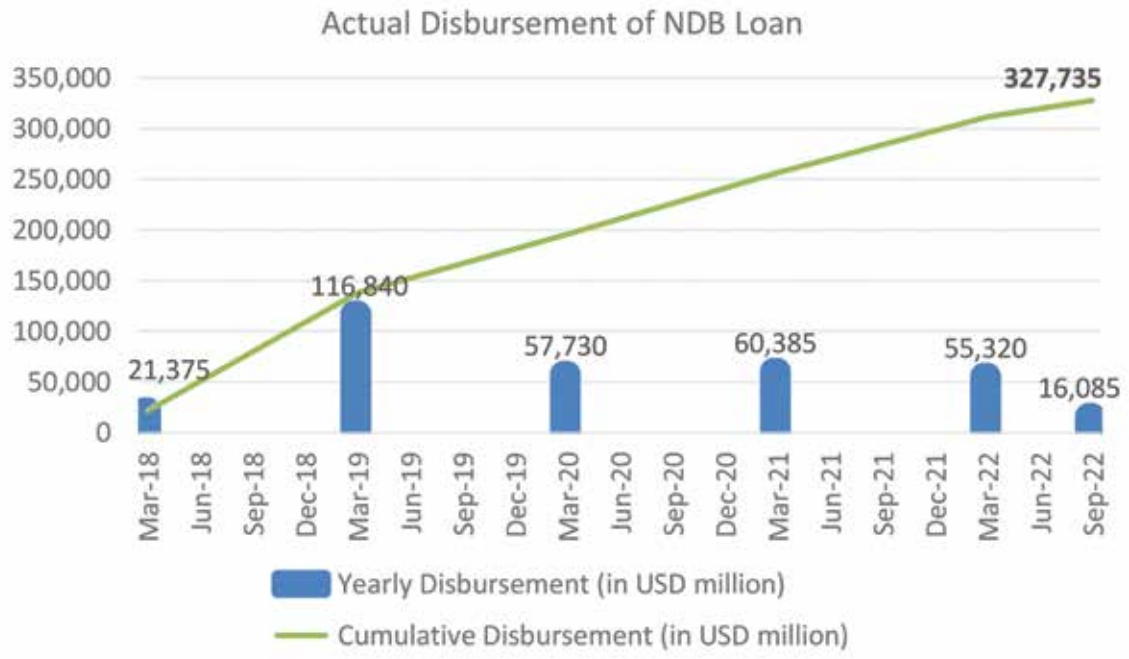
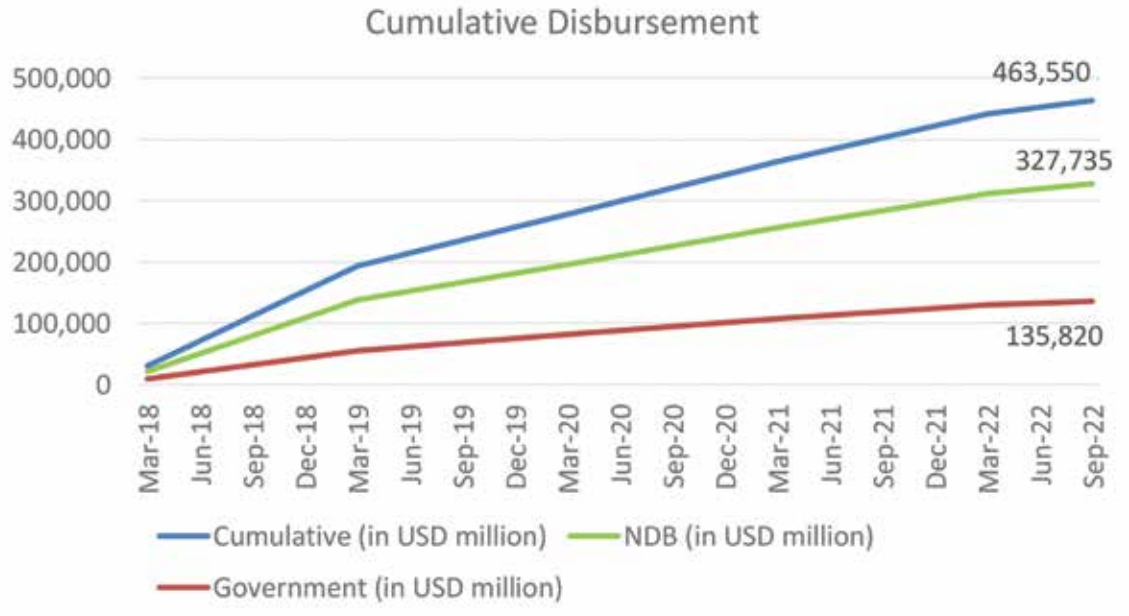


Figure 3: Total disbursements



Annex X: Reasons for contract extension

Package No.	Original contract completion date	Actual contract completion date	Delay (days)	No. of extensions	Accepted reasons
1	June 13, 2019	November 21, 2018	-	N. A.	
2	March 14, 2019	Terminated on July 25, 2019	-	N. A.	
2A	February 23, 2022	December 31, 2021	-	N. A.	
3	January 02, 2020	-	-	2	• Due to code of conduct • Shifting of electrical poles • Delay in electrical utility shifting estimates • Force Majeure due to COVID-19 pandemic and adverse climatic condition
4	May 17, 2019	Terminated on March 20, 2020	-	1	• Unavailability of land in forest area on Karera-Bhitarwar Road (Sonchiraiya Wildlife Sanctuary from km 3+00 to km 22+00)
4A	May 18, 2022	May 18, 2022	-	N. A.	
4B	March 21, 2022	-	-	-	
4C	February 15, 2022	February 15, 2022	-	-	
5	January 02, 2020	-	-	2	• Delay in permission of earthwork source • Navratri Mela at Ratangarh Mata Mandir • Cancellation of forest permission • Force Majeure due to COVID-19 pandemic • Excess rainfall and forward EOT-I consideration days with COVID-19 extension days
6	September 26, 2019	June 28, 2019	-	N. A.	
7	June 22, 2019	June 30, 2021	740	3	• Obtaining permission from forest department • Approval of electrical utility shifting • Revision in plan and profile • Change of scope for minor bridge at km 20+860 on Nanghati-Damedi-Leelatola Road • Electrical utility shifting on Nanghati-Damedi-Devri-Leelatola Road • Force Majeure due to COVID-19 pandemic • Excess rainfall and forward EOT-II consideration days with COVID-19 extension days
8	June 14, 2019	March 17, 2020	277	2	• Delay in approval for shifting of electrical utilities • Variation in quantity/change in scope of work
9	September 27, 2018	April 25, 2019	210	2	• Construction of 4-Lane road in Nagan-Deori Village • Variation in quantity of earthwork for highway and concrete in structure work • Execution of road furniture works
10	November 5, 2019	January 10, 2022	797	2	• Delay in permission from forest department • Delay in getting various permission due to code of conduct of assembly and parliament elections

Package No.	Original contract completion date	Actual contract completion date	Delay (days)	No. of extensions	Accepted reasons
11	December 27, 2018	August 03, 2020	585	2	• Delay in forest clearance • Revision of design of structures • Increase in quantities of BOQ items • Variation in quantity/change in scope of work • Force Majeure due to COVID-19 pandemic and adverse climatic condition
12	April 3, 2020	October 20, 2019	-	N.A.	
13	January 26, 2019	December 27, 2021	1066	4	• Variation in quantity/ change in scope of work • Revision of work programme for major bridge 29+450 (Bhoura-Phophalya Road) due to excess rainfall in the year 2019 • Force Majeure due to COVID-19 pandemic • Construction of minor bridge at km 0 +605 at Bhainsdehi-Nanda-Bhimpur Road • Relief for COVID-19 2nd wave • 2021 rainy season
14	February 24, 2018	November 3, 2018	252	2	• Local issues • Variation in quantities • Utility shifting Including water pipeline and other utilities in Sironj and Basoda cities
15	May 20, 2019	April 23, 2019	-	N.A.	
16	July 19, 2018	May 20, 2019	305	2	• Increase in quantities for shifting of electrical poles • Increase in length of project highway (840 m.) • Increase in quantities of structures works • Reconstruction of minor bridge at Ch. 14+393 • Variation in structure work • Repair work of major bridge on Parvati River at Ch. 09+020
17	October 26, 2019	September 18, 2021	693	3	• Variation in quantity/ change in scope of work • Revision in plan and profile drawings • All India Motor Transport Congress Strike • Variation approval • Force Majeure due to COVID-19 pandemic and adverse climatic condition • Construction of minor bridge at Km 23+580 • COVID-19 pandemic 2nd surge
18	March 28, 2018	May 18, 2019	416	2	• Approval to work in forest area • Change in structure design, additional work, and adverse climate condition • Utility shifting. • Non availability of land for diversion road in forest area section • Increase in quantities of structure works in comparison of BOQ
19	December 31, 2019	January 27, 2022	758	4	• Mining permission for stone quarry, Morum quarry • Delay in getting blasting permission due to code of conduct of assembly and parliament elections • Forest department permission • Shifting of electrical poles • Force Majeure due to COVID-19 pandemic and adverse climate condition • Variation in quantity/ change in scope of work • COVID-19 pandemic 2nd surge • Hard rock excavation and variation in quantity

Package No.	Original contract completion date	Actual contract completion date	Delay (days)	No. of extensions	Accepted reasons
20	December 31, 2019	-	-	2	• Variation approval • Electrical utility shifting estimates • Delay due to permission from forest department. • Force Majeure due to COVID-19 pandemic and adverse climatic condition • Local people hindrance • Approval for retaining walls at d/s of HPC
21	February 20, 2019	March 10, 2022	1112	1	• Variation in quantities of structure with respect to BOQ, hard rock encountered during structure excavation • Excess rainfall • Force Majeure due to COVID-19 pandemic
22	November 16, 2018	March 23, 2020	493	3	• Notification of commencement date without fulfillment of conditions precedent • Quantity variation • Construction of major bridge at Km 22+075
23	October 03, 2018	June 21, 2021	992	3	• Notification of commencement date without fulfillment of conditions precedent • Adverse climate condition • Construction of major bridge at km 19+310 (Redesign) • Force Majeure due to COVID-19 pandemic • Approval of realignment from Satpayri Gate No.07 behind effluent treatment plant at M/s Nepa property • Approval of estimate for shifting of electrical utility
24	March 27, 2019	August 24, 2021	881	4	• Forest clearance • Revision of design of structures • Revision of plan and profile in forest section (Km 31+750 to Km 57+610) • Increase in quantity of BOQ items • Variation in quantities of structure with respect to BOQ • Force Majeure due to COVID-19 pandemic • Hindrance caused due to water pipeline shifting and completion of work in built up section after shifting existing water pipeline in Dhanora village

Annex XI: Bibliography

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- Ministry of Finance
- Ministry of Road Transport & Highways
- New Development Bank
- Niti Aayog
- Press Information Bureau
- Statista
- United Nations
- World Bank

Annex XII: List of key persons met

Government of India

Mr. Abhishek Agarwal, Senior Specialist Director (Infrastructure Connectivity), NITI Aayog

Mr. Ajay Seth, Secretary, Department of Economic Affairs (DEA) and Alternate NDB Governor, Ministry of Finance

Ms. Ananya Agarwal, Deputy Secretary, Multilateral Economic Relations Division, Ministry of External Affairs

Ms. Manisha Sinha, Additional Secretary, DEA and NDB Board Director, Ministry of Finance

Mr. P.K. Mishra, Principal Secretary to the Hon. Prime Minister of India

Mr. Piyush Singh, Director, Multilateral Economic Relations Division, Ministry of External Affairs

Mr. Prasanna V Salian, Director, OMI, DEA, Ministry of Finance

Mr. Ravi Shankar, Joint Secretary, President of the Republic of India

Mr. Sanjay Kumar Nirmal, Director General and Special Secretary, Ministry of Road Transport and Highways

Mr. Sanjeev Kaushik, Additional Secretary, Department of Financial Services, Ministry of Finance

Mr Saurabh Kumar, Secretary (East), Ministry of External Affairs

Mr. Sudhendu Jyoti Sinha, Adviser (Infrastructure Connectivity and Electric Mobility), NITI Aayog

Mr. Suman Bery, Vice-Chairman, NITI Aayog

Government of Madhya Pradesh

Mr. Abhilash Dhanoriya, Manager (Technical), MPRDC

Mr. Anoop Chhabra, Assistant General Manager, MPRDC

Mr. BS Meena, General Manager, MPRDC

Mr. Deepak Pandey, Manager (Environment), MPRDC

Mr. Gopal Singh, Chief Engineer, MPRDC

Mr. Huzefa Ali, Company Secretary, MPRDC

Mr. Iqbal Singh Bains, Chief Secretary, Government of Madhya Pradesh

Mr. JC Bhatt, Social Safeguard Expert, MPRDC

Mr. Kailash Yadav, Assistant General Manager, MPRDC

Mr. MK Jain, Deputy General Manager, MPRDC

Mr. Mohit Kain, Manager (Technical), MPRDC

Mr. Mukesh Jain, Chartered Accountant, MPRDC

Mr. Neeraj Mandloi, Principal Secretary, Public Works Department, Government of Madhya Pradesh

Mr. Piyush Jaria, Manager (Technical), MPRDC

Mr. Pushpendra Rathore, Manager (Technical), MPRDC

Mr. RK Tripathi, General Manager (Finance), MPRDC

Mr. Satyakam Sahu, Team Leader, Road Asset Management System (RAMS)

Mr. Satyendra Bahadur, Environment Safeguard Expert, MPRDC

Mr. Shashank Mishra, Managing Director, MPRDC

New Development Bank

Mr. Abhishek Pathak, Principal Professional, India Regional Office (IRO)

Mr Anil Kishora, Vice-President and Chief Risk Officer, NDB

Mr. Artur Lacerda, Director General, Office of the President

Mr. Binitesh Kumar, Senior Professional, Project Portfolio Management

Mr. Deepanshu Sapra, Professional, Project Portfolio Management

Mr. DJ Pandian, Director General, India Regional Office (IRO)

Mr. Garvit Sah, Principal Professional, Public Sector

Mr. Jianshi Yao, Head of the India Desk

Ms. Lusha Zhuang, Professional, Office of the President

Mr. Mukund Kumar, Professional, Public Sector

Mr. Vladimir Kazbekov, Vice President and Chief Operating Officer

Asian Development Bank

Mr. Arun Bajaj, Transport Specialist, IRM

Mr. Bouadokpheng Chansavat, Portfolio Specialist, IRM

Mr. Hoe Yun Jeong, Deputy Country Director, IRM

Mr. Takeo Konishi, Country Director, India Resident Mission (IRM)

United Nations Resident Coordinator's Office

Ms. Radhika Kaul Batra, Chief of Staff, United Nations Organisation in India

Mr. Shombi Sharp, UN Resident Coordinator in India

World Bank

Mr. Auguste Tano Kouame, Country Director (India), World Bank

Ms. Bhavna Bhatia, Lead Operations Office

Mr. Hideki More, Acting Country Director for India

Mr. Santhakumar Sundaram, Senior Operations Officer

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Mr. Ritesh Jain, Senior IT Implementation Expert, Strategic Support Unit

Mr. Sandeep Shaurya, Team Leader, Strategic Support Unit

Consultant Representatives

Dr. Dilip Sharma, Environment Expert, M/s L.N. Malviya. Infra Projects Pvt. Ltd.

Dr. Naresh Singh, Social Expert, M/s L.N. Malviya. Infra Projects Pvt. Ltd.

Beneficiaries

Mr. Babloo Gurjar

Mr. Jhanak Singh

Mr. Jhanank Singh

Ms. Leela Sisodiya

Mr. Pradeep Gurjar

Mr. Radheshyam

Mr. Rajaram Singh

Mr. Raju Gurjar

Mr. Ramnarayan Gurjar

Mr. Sarjan Singh

Mr. Shersingh Meena

Annex XIII: Pictures from the evaluation mission to India

Before and after pictures of package 16 © MPRDC/Manish Kumar Atal

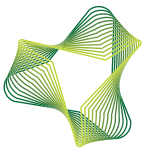
MPRDC Office © MPRDC/Manish Kumar Atal

Accident Response Centre © MPRDC/Manish Kumar Atal

Field visit © Madhya Pradesh Roads Development Corporation

Field visit © Madhya Pradesh Roads Development Corporation

Field visit © Ashwani Muthoo



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