Validation Report
December 2019

India: Bihar State Highways Project

Reference Number: PVR-619
Project Number: 41127-013
Loan Number: 2443

Independent Evaluation ADB

Raising development impact through evaluation

ABBREVIATIONS

ADB	–	Asian Development Bank
EIRR	–	economic internal rate of return
GSDP	–	gross state domestic product
GoB	–	Government of Bihar
IRI	–	international roughness index
km	–	kilometer
MDR	–	major district road
ODR	–	other district road
OPRMC	–	output- and performance-based road assets maintenance contract
PCR	–	project completion report
PIU	–	project implementation unit
PMU	–	project management unit
PPMS	–	project performance monitoring system
RCD	–	Road Construction Department
RMS	–	road management system
TA	–	technical assistance

NOTE

In this report, "$" refers to United States dollars.

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PROJECT BASIC DATA

Project Number	41127-013	**PCR Circulation Date**	28 August 2018	
Loan Number	2443	**PCR Validation Date**	Dec 2019	
Program Name	**Bihar State Highways Project**			
Sector and Subsector	Transport	Road transport (non-urban)		
Strategic Agenda	Environmentally sustainable growth			
Safeguard Categories	Environment		B	
	Involuntary resettlement		A	
	Indigenous peoples		B	
Country	India		**Approved** ($ million)	**Actual** ($ million)
ADB Financing ($ million)	**ADF:** 0.00	**Total Project Costs**	468.00	450.60
	OCR: 420.00	**Loan/Grant**	420.00	351.50
		Borrower	48.00	99.10
		Beneficiaries		
		Others		
Cofinancier		**Total Cofinancing**		
Approval Date	18 Sep 2008	**Effectiveness Date**	8 Feb 2009	8 Jan 2009
Signing Date	10 Nov 2008	**Closing Date**	31 Jul 2012	28 Jan 2013
Project Officers		**Location**	**From**	**To**
	M. Roesner	ADB headquarters	Jan 2011	Jul 2011
	L. Tai	India Resident Mission	Jul 2011	Jan 2012
	A. Motwani	India Resident Mission	Dec 2011	Jan 2012
IED Review				
Director	N. Subramaniam, IESP			
Team Leader	C. Mongcopa, Associate Evaluation Officer, IESP*			

ADB = Asian Development Bank, ADF = Asian Development Fund, IED = Independent Evaluation Department, IESP = Sector and Project Division, OCR = ordinary capital resources, PCR = project completion report.
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I. PROJECT DESCRIPTION

A. Rationale

1. Bihar is a landlocked state in the middle Gangetic plain region of India. It is bounded by Nepal in the north, the states of Jharkhand in the south, Uttar Pradesh in the west, and West Bengal in the east. It is one of the most populated, economically backward, and low-income states in India. Its road network has poor coverage and condition. The state has put a high priority on strengthening this road network to catalyze economic development.

2. Bihar has 82,000 kilometers (km) of roads with 45,000 km surfaced which is comprised of: 3,723 km national highways; 3,128 km state highways; 7,714 km major district roads (MDRs); and 67,080 km other district roads (ODRs) and village roads. Its road density was 901 km per million population as compared with the national average of 2,567 km. Most of the higher-class roads have sealed surface (bitumen or concrete), while 55% of ODRs and village roads were unsealed. Only 2% of the state highways had two or more lanes, while 71% had single lane. Single lane covered 83% of MDRs and 100% of ODRs and village roads. Most of the state highways, MDRs, ODRs, and village roads had severely deteriorated and required major rehabilitation due to the continuous road maintenance shortfall and the increasing traffic and load

volumes. The need to increase and improve the existing state highway network is critical. This could be achieved by widening carriageways and strengthening bridges and culverts.[1]

3. The Bihar Road Construction Department (RCD) is responsible for state highways, MDRs, and national highways funded by the Government of India. The National Highway Authority is responsible for about 20% of Bihar's national highways. The Government of Bihar (GoB) identifies roads for build-operate-transfer and generally entrust these to the India Infrastructure Finance Company and Infrastructure Development Finance Company for project structuring and implementation. District councils and the Rural Works Department are responsible for the ODRs and village roads. The Rural Works Department is responsible for the chief minister's rural roads program, Mukhya Mantri Gram Sadak Yojana, which connects habitations with 500–999 population. This is in parallel with the Prime Minister's nationwide rural roads program, Pradhan Mantri Gram Sadak Yojana, which prioritizes connectivity for habitations with more than 1,000 population.

4. Increased number of roads beyond repair and a backlog of deferred maintenance resulted from insufficient maintenance funds in the past. The government had approved the upgrading of 890 km of national highways to four lanes under the National Highway Development Program III using the build-operate-transfer modality. The GoB has assumed the State Highway Development Program to rehabilitate and upgrade state highways to at least two lanes and expand the state highway network by upgrading MDRs into two lanes. The program aimed to upgrade 90% of the 3,127 km of state highways during the Eleventh Five-Year Plan (2007–2012)[2] through the Government of India's Rashtriya Sam Vikas Yojna,[3] build-operate-transfer schemes, and Asian Development Bank (ADB) assistance.

5. The GoB had also taken on sector development initiatives under the framework of Bihar Road Sector Development–New Dimensions to develop and sustain the road network by (i) modernizing road agencies; (ii) encouraging private sector participation in road financing; (iii) outsourcing design, supervision, and construction, along with systems for independent proof checking and audit; (iv) setting up a stable source of funding for road development and maintenance; (v) attracting financially sound and fully equipped contractors by offering large contracts for national and state highway projects; (vi) enabling smaller contractors to acquire experience; (vii) introducing long term performance-based maintenance contracts; (viii) initiating corridor management to expedite clearance of utilities and availability of materials; and (ix) strengthening capacity of local contractors.[4]

6. The Bihar State Highways Project aimed to rehabilitate and reconstruct about 820 km of state highways identified under the Bihar State Highway Development Program including the upgrading of existing roads to two lanes, strengthening culverts and bridges, constructing new bridges and cross drainage structures, and constructing structures for resettlement and rehabilitation. The project was intended to enhance the overall sector management capacity of GoB by providing (i) equipment necessary to enhance quality control, survey and design, road safety, and control of overloading and vehicle emissions; and (ii) technical assistance (TA) to support institutional development initiatives, especially for reform of the RCD and capacity development, including (a) modernization of road institutions, (b) improvements to RCD business

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[1] ADB. 2008. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to India for the Bihar State Highways Project*. Manila.

[2] Government of India, Planning Commission. 2008. *Eleventh Five-Year Plan, 2007–2012*. Delhi.

[3] This is a special program launched by the Planning Commission in 2004 with the objectives of removing the barriers to growth and improving the quality of life of the people.

[4] Government of India. 2007. *Bihar Road Sector Development–New Dimensions*. New Delhi.

processes, and (c) support for increasing private sector participation (footnote 1). The fact-finding mission had determined that based on the readiness of the project (all 9 roads were ready for tender call), the project loan modality was appropriate, and the government agreed.

B. Expected Impacts, Outcomes, and Outputs

7. The envisaged impact of the project was increased economic growth in Bihar by 2015. The anticipated outcome was enhanced road transport efficiency and safety. The expected outputs were rehabilitated and improved state roads, and improved sector management (footnote 1, Appendix 1).

C. Provision of Inputs

8. The project was approved in September 2008 and became effective in January 2009, a month earlier than envisaged. The loan closed in January 2013, against the target of July 2012. Local insurgency problems and slow contractor performance affected two subprojects delaying the project completion date by about 4 years. The GoB financed the works undertaken after loan closing. At appraisal, the project was to require 60 person-months of international and 3,020 person-months of national consultant services. The project completion report (PCR) did not provide the actual number of person-months used for international and national consultants. [5]

9. The estimated project cost was $468.0 million inclusive of contingencies, interests, and commitment charges during construction. Of this, $310.0 million was for foreign exchange and $158.0 million was for local currency. The ADB loan was to finance for 89.7% of the estimated cost while the government was to provide for the balance. The actual cost was 3.7% lower than the estimated due to the (i) depreciation of the rupee against the US dollar since appraisal,[6] (ii) non-utilization of $4.0 million allocated for equipment under the institutional development component, and (iii) lower interest cost. Of the ADB loan, $68.5 million was cancelled because aside from the reasons stated above, the GoB increased its expenditure on program management and funding the spillover works for two projects beyond the loan closing date.

10. According to ADB policies and the government requirements, the project was classified as category B for environmental impacts, category A for involuntary resettlement,[7] and category B for indigenous peoples.[8] Initial environmental examinations for the nine subprojects were prepared and showed that adverse environmental impacts would occur mainly during construction and are mostly temporary. The project minimized the need for land acquisition and involuntary resettlement by adopting the most feasible technical design with rehabilitation of highways within the existing right-of-way. On indigenous peoples, the project was classified in accordance with ADB's Policy on Indigenous Peoples (1998).

11. The TA grant amounting to $1.0 million provided for institutional strengthening that supported some of the GoB's road sector development initiatives. The TA focused on (i) redefining and restructuring RCD to a state-of-the-art road agency, and (ii) implementing new business

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[5] ADB. 2018. *Completion Report: Bihar State Highways Project*. Manila.

[6] The rupee depreciated about 52% against the dollar between appraisal (2008) and completion (2016). Footnote 5.

[7] ADB. 1995. *Involuntary Resettlement Policy of the Asian Development Bank*. Manila. https://www.adb.org/sites/default/files/institutional-document/32515/files/involuntary-resettlement.pdf

[8] ADB. 1998. *The Bank's Policy on Indigenous Peoples*. Manila. https://www.adb.org/sites/default/files/institutional-document/33441/files/policy-indigenous-peoples.pdf

procedures and skills training for RCD officials. It required 31 person-months of international consultants.[9]

D. Implementation Arrangements

12. The GoB was the executing agency through the RCD under which, a project management unit (PMU) was established. The PMU was then strengthened and assigned under the Bihar State Road Development Corporation, a subsidiary agency of the RCD. Four project implementation units (PIUs) were established. Each was headed by a deputy general manager, who was delegated with adequate technical and administrative authority to expedite subproject implementation. The PCR rated the implementation arrangement efficient and effective.

13. The TA financed for an international consulting firm with eight international consultants to review and analyze the (i) institutional structure of the RCD, (ii) existing and draft laws and acts, and (iii) new business procedures and training needs. ADB identified and approved areas for capacity building and training inputs including (i) two overseas study tours organized; and (ii) a pilot road management system (RMS) designed, developed, and delivered requiring additional expertise and reallocation of person-months (PCR, Appendix 8).

14. The TA determined the need for a comprehensive road policy and raised the capacity of sector agencies including reallocating assets among the road sector agencies. Contract management, road planning, and quality assurance were studied, and the TA proposed the adoption of performance-based maintenance, designed and delivered a pilot RMS, and recommended a plan for improving quality management. The PCR (para. 14) indicated that the TA prepared a draft Road Administration Act and introduced advanced knowledge and practice in road safety including a draft road safety policy to Bihar State Road Development Corporation and RCD staff.[10] It also recommended road development and management in Bihar. The pilot RMS developed an understanding for maintaining a road database to assist in decision-making, prioritizing road maintenance works, and updating asset records regularly. At completion, the Road Administration Act was under review, the Road Safety Policy was already being implemented, the performance-based road maintenance was being applied in the state, and the pilot RMS was fully functional and being upgraded to include more functions. The TA deliverables were assessed useful in formulating policies, programs, and monitoring systems, and contributed to institutional strengthening of the road transport sector in Bihar. Although extended twice, the TA was rated successful.

15. The PCR noted that the borrower and executing agency complied with most of the loan covenants except on the development and implementation of the project performance monitoring system (PPMS), thus constraining the GoB from measuring project benefits and preparing a more comprehensive completion report. This validation notes that of the 44 loan covenants, 40 were complied with. The three covenants that were partially complied with include (i) PCRs for each project road were prepared but were limited to the engineering aspects and excluded other requirements,[11] (ii) a baseline for performance indicators and conducting annual surveys to evaluate the achievements were not undertaken, and (iii) a midterm review mission to focus on issues relating to project implementation was not fielded.

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[9] Footnote 1, Section IV, p. 12.
[10] The Act includes provisions related to road governance and road management including road maintenance.
[11] Schedule 5 notes these as (a) contractors' and consultants' performance, (b) social and economic impact, and (c) economic rate of return.

II. EVALUATION OF PERFORMANCE AND RATINGS

A. Relevance of Design and Formulation

16. The PCR rated the project relevant and indicated that the development of highways and roads is an integral part of the government's strategy for economic growth and poverty reduction. It recognized that the project was supportive of the government's plan (para. 4), which articulated the need for adequate, cost-effective, and high-quality infrastructure as a prerequisite to sustainable growth. It was also aligned with the Twelfth Five-Year Plan (2012–2017), which continued the focus on inclusive growth and encouraged developments in infrastructure, agriculture, education, health, and social welfare through government spending.[12] The project was aligned with the country strategy and program update of ADB for India (2006–2008) and its country partnership strategy for India (2009–2012).

17. The PCR acknowledged that the project design and modality were appropriate with the active participation of road agencies and communities, thus improved project readiness. Minor engineering revisions in the design were done based on actual site conditions and to enhance the road designs. This validation notes the consistency of the project with the government's plans and ADB's country strategies. The project was in accordance with the Bihar State plans to rehabilitate highways to at least two lanes and expand the state highway network by upgrading MDRs into two lanes. This validation further notes that the attached TA took on sector development initiatives under the framework of Bihar Road Sector Development–New Dimensions (para. 5). The criteria used did not consider the security situation in the subproject locations and long delays occurred in two subproject civil works due to local insurgency problems. This should have been identified during subproject selection and appraisal. Based on the above and the weakness in the criteria used in subproject selection, this validation assesses the project relevant.

B. Effectiveness in Achieving Project Outcomes and Outputs

18. The PCR rated the project effective in achieving its outcome and outputs and noted that performance targets were achieved or progressed towards their achievement. The project had improved 825.1 km of state highways, higher than the 820 km target at appraisal. The improved roads were widened into two lanes with international roughness index (IRI) from 3 to 4, better than the 5.0 IRI target at appraisal. The improved project roads led to higher traffic growth with cars achieving an 8.4% growth rate, which was higher than the 8.0% target. Vehicle operating costs on project roads decreased by 37% on average against the target of 30%. Travel time declined by approximately 55%, higher than the 40% as targeted and was attributed to the increased speed from 30–35 km/hour before the project to 60–80 km/hour after the project.

19. The PCR reported that the project improved access and connectivity of the rural poor to social services, markets, and other economic activities but did not provide any supporting data. The accident rate decreased by about 23%, higher than the 20% target, and fatalities decreased by about 4.4% from 2011 to 2016. At completion, the PCR reported that project roads were maintained with IRI below 5 as expected but did not provide any supporting data. On the improvement in efficiency of RCD operations, the PCR did not give any evidence on the 100% increase in the length of maintainable state roads per RCD engineer. While the PCR had provided data on the achievement of specific outcomes indicated in the design and monitoring framework,

[12] Government of India, Planning Commission. 2013. *Twelfth Five-Year Plan (2012–2017)*. Delhi.

this validation notes that three outcome indicators were not supported by any data or evidence to prove the achievement of its target outcomes.

20. The PCR rated the implementation of environmental safeguards satisfactory. The project's initial environmental examination and environment management plan addressed environmental risks and impacts satisfactorily. The impacts were expected during the construction stage such as dust, traffic, social impacts from right-of-way expansion, water use, and waste management. The project submitted environmental monitoring reports in a timely manner. Performance was assessed to be within the parameters in the environment management plan with minor deviations indicated for corrective action implemented.[13]

21. The PCR rated the implementation of the resettlement action plan satisfactory. The prepared subproject plans identified the required key aspects including social assessment, surveys, special provisions for indigenous peoples, entitlement matrices, and details on procedures and grievance mechanisms. It documented consultations appropriately. Resettlement was limited to squatter and encroachers on the road right-of-way. Detailed plans were prepared to guide resettlement, with adjustments made in the number of affected peoples during implementation and measures taken to avoid increased effects on households from right-of-way expansion. Third party monitoring indicated general satisfactory performance. No final evaluation beyond the periodic monitoring reports were given and the completion reports were not specific on the end-of-project status in the restoration of housing and livelihoods (footnote 13). On indigenous peoples, the PCR reported its implementation satisfactory although no specific indigenous peoples plan was prepared. Affected indigenous peoples' groups were already mainstreamed. However, supplemental support in entitlement matrices were provided for vulnerable tribal peoples that would require a differentiated approach. This validation finds that the environmental, resettlement, and indigenous peoples' safeguards were satisfactorily implemented and conformed to the mitigation measures. Given that most expected outcomes were achieved with some exceeding their targets, and despite the lack of factual evidence, this validation assesses the project effective.

C. Efficiency of Resource Use

22. The PCR rated the project efficient in achieving its outcome and outputs. Applying the same methodology used at appraisal and utilizing current data, the PCR recomputed the project's economic internal rate of return (EIRR) resulting to 20.5%. This was slightly lower than estimated at appraisal although still above the 12% hurdle rate. The PCR conducted a sensitivity analysis that indicated the project to be economically viable for all tested scenarios and confirmed its robust economic viability.

23. This validation notes that, at appraisal, the EIRR for the whole project was not indicated in the report and recommendation of the President, but subproject EIRRs were estimated, which ranged from 15% to 48% (footnote 1). The EIRRs for three roads were below 20% and higher than 30% for the five roads. The PCR did not recompute the subproject EIRRs. It was therefore difficult to compare the EIRRs computed at appraisal and completion. The PCR attributed the lower recomputed project EIRR to the long implementation period, higher capital cost, and lower traffic volumes on two project roads (para. 8).[14]

[13] ADB (Independent Evaluation Department). 2019. Project Safeguard Assessment: Bihar State Highways Project in India. 22 February (internal).

[14] The two subprojects were SH-68 Sheogunj-Baidrabad (83.1 km) and SH-69 Dumaria-Ranitalab, which was the longest subproject road at 154.2 km.

24. On the lower traffic volumes, the PCR-estimated traffic growth rates for 2016–2020 and 2021–2025 were higher than those estimated at appraisal for 2007–2012, 2013–2018, and 2019–2024. The PCR-estimated traffic growth rates for 2021–2035 and 2036–2040 were the only rates lower than estimated at appraisal (footnote 5, Appendix 11). Without traffic data, it was difficult to estimate the magnitude of the differences between the appraisal and project completion traffic forecasts. Since the EIRRs at appraisal and completion could not be compared without additional data, this validation recalculated the project EIRR at appraisal using the weighted length of the subproject road.[15] This resulted in an EIRR of 30.0%, which was significantly higher than the recalculated EIRR at completion.

25. The ADB review missions identified delays in mobilization, center line surveys, supply of materials, shifting of electric poles, and flooding to have caused project implementation setbacks. Only two subprojects suffered major delays (para. 8). The government closed the two subprojects but continued financing the remaining civil works using its own funds until completion in 2016. Despite the lower overall recomputed project EIRR, this validation assesses the project effective.

D. Preliminary Assessment of Sustainability

26. The PCR rated the project likely sustainable considering the institutional and financial arrangements for road construction and maintenance. While tolling was not an option, the PCR's discussion of sustainability was confined to institutional and maintenance aspects. RCD is responsible for state road maintenance and to meet the maintenance requirement of Bihar's road network, its annual maintenance budget almost doubled from ₹3,500 million in FY2012 to ₹6,000 million in FY2017, while the actual maintenance expenditures were ₹3,275 million in FY2012 and ₹5,970 million in FY2017. GoB implemented proactive measures to reduce the cost of road maintenance for 8,828 km of state highways and MDRs were maintained under 74 output and performance-based road asset maintenance contracts (OPRMCs) with plans to increase the number of contracts eventually. The increase in the allocation of funds for road maintenance and the use of OPRMCs were considered adequate for the sustainability of road assets. For the long term, the RCD is considering the operate-maintain-transfer modality of private sector participation, which will likely reduce maintenance costs by more than 10%.

27. The associated TA assisted in RCD and Bihar State Road Development Corporation's institutional development initiatives including training on project management, road maintenance, private sector participation, financial modeling, and risk analysis. A road master plan up to 2035 was prepared under a separate ADB TA to guide road development in the state.[16]

28. This validation notes that no attempt seems to have been made to determine exactly the annual funding required for RCD's capital investments and road maintenance to improve the condition of the state road network from the medium to long term. However, this validation finds that the annual budget for road maintenance has been increasing. Full implementation of the RMS, which was delivered to the RMS Unit of the RCD through the attached TA to assist in decision-making, prioritizing road maintenance works, and updating asset records regularly, was needed, but its status is unclear at project completion.

[15] The weighted length of each subproject road was computed as, (length [in km] of subproject road ÷ total length of all subproject roads) × (computed EIRR of subproject road), and the results were summed to estimate the overall project EIRR.

[16] ADB. 2015. *Technical Assistance Report: Road Master Plan for Bihar's State Highway Development*. Manila.

29. The revenue sources relating to road use include vehicle taxes, permits, fees, penalties, and central government funding. At appraisal, the average annual increase in revenues was at 20% due to improved vehicle registration and tax payments. Road users also pay commercial sales taxes for vehicles, fuel, tires, and spare parts. In 2017–2018, Bihar's revenue surplus increased due largely to increases in central grants and its share in the central divisible pool. Of the increase in total revenue receipts by ₹11,862 crore, 47% was from increases in tax revenues and 43% from central grants, with the rest coming from increases in non-tax revenues. The increase in tax revenue was mainly from the state's share in central taxes while internally generated revenues remained insufficient to fund road maintenance.[17] No analysis was made on the sufficiency of revenue sources to fund road maintenance requirements. The PCR should have determined whether the expected annual revenue flows from sources would be sufficient to fund the expected road maintenance expense requirements of the GoB. However, it has been subsequently pointed out that the GoB adopted a Road Assets Maintenance Policy in 2013, which adopted the output- and performance-based road assets maintenance contracts (OPRMCs) modality. These 5-year OPRMC contracts had bound the GoB to provide budgetary funds to pay the contractors for road maintenance. This validation finds that the specific roads or sections covered under the OPRMC cannot be readily identified nor confirm inclusion of project roads. However, the recently provided status report on OPRMCs and a discussion on the subject in Independent Evaluation Department's transport sector assessment for India,[18] justified a sustainable rating. The funding priority provided to existing roads under the OPMRC should ensure at the least the quality and serviceability of the project roads for 5 years and possibly for subsequent periods thereafter. Based on the discussions above, this validation assesses the project likely sustainable.

III. OTHER PERFORMANCE ASSESSMENTS

A. Preliminary Assessment of Development Impact

30. The PCR rated the project's development impact satisfactory. From consultations and data collected during PCR preparation, it was determined that (i) Bihar's economy showed fast development in the recent decade with the road transport sector contributing from 1.7% to 4.3% of the gross state domestic product (GSDP) from 2006 to 2015;[19] (ii) total employment of 56,032 person-months was provided by the project, including 7,920 person-months for unskilled labor; (iii) many newly opened hotels, shops, and garages along the project roads provided substantial work opportunities to local people; and (iv) the price of land along the project roads increased by three to four times on average.

31. This validation notes that the road transport's contribution to the GSDP by 2015 was actually 4.7% in constant 2011–2012 prices. This was higher than the 3.5% growth rate expected for 2015. Based on latest available statistics, road transport's contribution to GSDP has already reached 5.2% in constant 2011–2012 prices by 2017–2018.[20] Based on the latest available data, the project contribution is deemed to be significant (though its direct attribution cannot be verified). This validation assesses the project development impact satisfactory.

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[17] Government of Bihar, Finance Department. 2019. *Economic Survey 2018–2019.* Patna.
[18] IED. 2017. *Country Assistance Program Evaluation for India*. Manila: ADB.
[19] Government of Bihar, Finance Department. 2018. *Economic Survey 2016–2017*. Patna.
[20] Footnote 16. The road transport sectoral contribution to GSDP at 2011–2012 constant prices were 2011–2012: 3.5%; 2012–2013: 4.0%; 2013–2014: 4.4%; 2014–2015: 4.7%; 2015–2016: 4.9%; 2016–2017(P): 5.0%; and 2017–2018 (Q): 5.2%.

B. Performance of the Borrower and Executing Agency

32. The PCR rated the performance of the borrower and the executing agency satisfactory noting that relevant government agencies including the Department of Economic Affairs in the Ministry of Finance participated in project coordination and monitoring. The borrower and executing agency provided the required counterpart funding and established the PMU and PIUs. The PMU submitted monthly and quarterly progress reports in a timely manner with assistance from the supervision consultants. ADB accepted annually audited project accounts and financial statements.

33. This validation notes that after recognizing that two subprojects would fail to meet the target project completion date, the GoB opted to close the loan on the stipulated date and then financed for the remaining costs for the completion of the two subprojects. During implementation, the RCD adequately planned and equipped its central and regional quality control laboratories with laboratory and survey and design equipment from its own resources. This resulted to cancellation of loan allocation for equipment, which was included in the project's financing plan. The RCD and the PMU facilitated and fully supported all ADB review missions during implementation and at completion. The borrower and executing agency either partially or fully failed to comply with some of the loan covenants as described above (para. 15). Based on the above, this validation assesses the borrower and executing agency's performance satisfactory.

C. Performance of the Asian Development Bank and Cofinanciers

34. The PCR rated ADB's overall performance satisfactory. The project administration was through ADB headquarters until it was delegated to the India Resident Mission in December 2011. ADB was closely involved in resolving issues during implementation and had fielded 10 review missions, including the inception, special loan administration, safeguard review, and the completion review missions. The ADB missions provided inputs in preparing action plans to expedite project implementation and conducted training and support to the PMU, PIU, consultants, and contractors on project management and environment and social safeguards with the assistance of experts. ADB processed documents, approvals, and payments for claims promptly. The government recognized the role of the ADB missions in providing timely advice and technical support on all aspects of the project.

35. This validation notes that from the review of back-to-office mission reports, follow-ups on the loan covenant to establish and operate the PPMS including collection of baseline and updated data were not sustained. This was required of the executing agency within 3 months from loan effectivity. This non-compliance was only indicated in the PCR Appendix 9, and it was already too late to take any remedial action. Various ADB missions provided consistent and fruitful assistance for project implementation and loan covenants, with the government and ADB agreements and commitments, are important elements of the project. The PPMS is an important aspect for the sustained monitoring of the project during implementation and through completion, with repercussions on the effective and timely availability of project information. The reliability, sufficiency, and validity of information/data given in the various reports should be supported and in parallel with information/data contained in the PPMS. Given that most of the covenants have been complied with, with some partially complied with, this validation assesses the ADB performance satisfactory.

D. Others

36. The executing agency prepared subproject completion reports, which were limited to the engineering aspects and excluded other requirements (para. 15).

IV. OVERALL ASSESSMENT, LESSONS, AND RECOMMENDATIONS

A. Overall Assessment and Ratings

37. Overall, this validation assesses the project successful based on the evaluation criteria ratings. It assessed the project relevant, effective, efficient, and likely sustainable.

Overall Ratings

Validation Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
Relevance	Relevant	Relevant	
Effectiveness	Effective	Effective	
Efficiency	Efficient	Efficient	
Sustainability	Likely sustainable	Likely sustainable	The GoB Road Assets Maintenance Policy prioritizes funding given to existing roads under the OPMRC and should ensure at the least the quality and serviceability of the project roads for 5 years and possibly for subsequent periods thereafter.
Overall Assessment	**Successful**	**Successful**	
Preliminary Assessment of Impact	Satisfactory	Satisfactory	
Borrower and executing agency	Satisfactory	Satisfactory	
Performance of ADB	Satisfactory	Satisfactory	The PPMS is an important aspect and factor for the sustained monitoring of the project during implementation and throughout the project life, with repercussions on the effective and timely availability of project information. Whether as a loan covenant or not, it should be ensured that the PPMS is properly established and operational in subsequent or existing projects in India.
Quality of PCR		Satisfactory	Para. 42.

ADB = Asian Development Bank, GoB = Government of Bihar, IED = Independent Evaluation Department, OPMRC = output- and performance-based road assets maintenance contract, PCR = project completion report, PPMS = project performance monitoring system.
Source: ADB and Independent Evaluation Department.

B. Lessons

38. The delay in project implementation, specifically for subprojects SH68 and SH69, led the PCR to identify several **project level** lessons: (i) the need for closer attention in identifying local needs, security concerns, and the capacity of contractors so that specific measures, such as more stringent criteria for assessing financial resources of the contractor and risk premium to address security concerns, could be incorporated in the project design and implementation schedule to avoid delays; (ii) the usefulness of the TA for capacity development; and (iii) the need for more regular reviews and close interaction of the ADB project team with the PMU, PIU, consultants,

and contractors were considered necessary to avoid weaknesses in environmental monitoring and management plans.

39. This validation offers two additional lessons:

(i) **Sector level**. ADB should have waited for sufficient time before processing a follow-up loan for the executing agency to fully develop its capacity in project implementation since this was the first loan to Bihar. Processing the second loan for approval by 2010 together with a PPTA in 2008 or 2009 divided the attention of the RCD between the many prerequisite activities for mobilization of the Bihar State Highways Project and the processing of the follow-up loan. Subsequently, RCD also had to attend to the project review missions for the two loan projects, which may have affected its monitoring of the projects.

(ii) **Project level**, Project review missions should consistently follow-up on loan covenant compliance, specifically, the development and operationalization of the PPMS. It was clear that the project review missions did not give importance to the PPMS when it was not developed at project completion, including the collection of baseline and updated data. Under the loan covenant, the PPMS was supposed to be operational three months after loan effectivity.

C. Recommendations for Follow-Up

40. The PCR recommended that the GoB should review and implement the draft Road Administration Act prepared under the attached TA. This validation recommends further review, revision, and legislation, if needed, and that the resident mission should monitor and follow-up the implementation of the attached TA outputs. These include (i) RCD's adoption of performance-based maintenance; (ii) adoption, revision, if needed, and implementation of the pilot RMS in RCD; (iii) implementation of the recommended plan for improving quality management at the RCD; and (iv) progress of implementation of the Road Safety Policy.

V. OTHER CONSIDERATIONS AND FOLLOW-UP

A. Monitoring and Reporting

41. The government did not comply with the development and operation of the PPMS, although it submitted periodic reports on project progress, and measured outcome and impact indicators. As such, the achievement of outcome indicators was not supported by data.

B. Comments on Project Completion Report Quality

42. This validation assesses PCR quality satisfactory. On sustainability, this validation confirms the PCR rating of likely sustainable (para. 29) on account of the OPRMCs. The increase in tax revenue was mainly because of the state's share in central taxes. It was also noted that the GoB consistently underspent on its roads budget which reflects on its absorptive capacity to fully utilize its available financial resources. The PCR's discussion of the core criteria was not on solid ground as there was no evidence or data to support this (para. 15). The PCR only recomputed for the project as a whole and not for individual subprojects as was done during appraisal. The economic evaluation for each subproject rather than just for the whole project was actually set at appraisal and should have been adopted in the PCR. This was to provide the information necessary to compare pre- and at-completion economic indicators for each subproject

implemented. This “template” should also be adopted in the subsequent conduct of the project performance evaluation report.

C. Data Sources for Validation

43. Data sources for this validation included the project’s report and recommendation of the President, the PCR, and back-to-office reports, including the attached aide memoires of ADB missions, safeguard assessment, ADB’s Country Strategy and Program Update for India (2006–2008), ADB’s Country Partnership Strategy for India (2009–2012), India’s Eleventh and Twelfth Five-year Plans, GoB’s Economic Survey for 2016–2017 and 2017–2018, and ADB TA on the Road Master Plan for Bihar’s State Highway Development.

D. Recommendation for Independent Evaluation Department Follow-Up

44. The PCR recommended the preparation of the project performance evaluation report in 2020 or later. This validation views the absence of the PPMS, baseline data, and data updates as a formidable constraint in the preparation of the Project Performance Evaluation Report. Unless the responsible offices in the State of Bihar periodically collects relevant data for the project roads, the project performance evaluation should not be conducted.