



Completion Report

Project Number: 40423-023
Loan Number: 2881
June 2020

India: Rural Connectivity Investment Program (Tranche 1)

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Asian Development Bank

CURRENCY EQUIVALENTS

Currency unit		–	Indian rupee/s (₹)
		At Appraisal	At Project Completion
		15 May 2012	30 June 2018
₹1.00	=	\$0.01854	\$0.0146
\$1.00	=	₹53.9450	₹68.44

ABBREVIATIONS

ADB	–	Asian Development Bank
CPF	–	community participation framework
DMF	–	design and monitoring framework
DPR	–	detailed project report
EIRR	–	economic internal rate of return
GAP	–	gender action plan
GRC	–	grievance redressal committee
km	–	kilometer
MFF	–	multitranche financing facility
MORD	–	Ministry of Rural Development
NRIDA	–	National Rural Infrastructure Development Agency
PIC	–	project implementation consultant
PIU	–	project implementation unit
PMGSY	–	Pradhan Mantri Gram Sadak Yojana (Prime Minister's Rural Roads Program)
PRI	–	<i>panchayati raj</i> institution
RCIP	–	Rural Connectivity Investment Program
RCTRC	–	rural connectivity training and research center
RRNMU	–	rural road network management unit
RSA	–	road safety audit
SRRDA	–	state rural roads development agency
TA	–	technical assistance

NOTES

- (i) The fiscal year (FY) of the Government of India and its agencies ends on 31 March. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2020 ends on 31 March 2020.
- (ii) In this report, "\$" refers to United States dollars.

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BASIC DATA

A. Loan Identification

- | | | |
|----|----------------------------------|--|
| 1. | Country | India |
| 2. | Loan number and financing source | 2881, ordinary capital resources |
| 3. | Project title | Rural Connectivity Investment Program (Project 1) India |
| 4. | Borrower | Ministry of Rural Development, Government of India |
| 5. | Executing agencies | Ministry of Rural Development; and the governments of Assam, Chhattisgarh, Madhya Pradesh, Orissa, and West Bengal |
| 6. | Amount of loan | \$252 million |
| 7. | Financing modality | Multitranchise financing facility |

B. Loan Data

- | | | |
|----|----------------------------------|-------------------------------------|
| 1. | Appraisal | |
| | – Date started | 6 December 2011 |
| | – Date completed | 6 February 2012 |
| 2. | Loan negotiations | |
| | – Date started | 16 May 2012 |
| | – Date completed | 17 May 2012 |
| 3. | Date of Board approval | 22 August 2012 |
| 4. | Date of loan agreement | 2 April 2013 |
| 5. | Date of loan effectiveness | |
| | – In loan agreement | 1 July 2013 |
| | – Actual | 5 June 2013 |
| | – Number of extensions | None |
| 6. | Project completion date | |
| | – Appraisal | 30 June 2015 |
| | – Actual | 30 June 2018 |
| 7. | Loan closing date | |
| | – In loan agreement | 31 December 2015 |
| | – Actual | 30 June 2018 |
| | – Number of extensions | 2 |
| 8. | Financial closing date | |
| | – Actual | 2 January 2019 |
| 9. | Terms of Loan | |
| | – Interest rate | London interbank offered rate-based |
| | – Maturity (number of years) | 25 |
| | – Grace period (number of years) | 5 |

10. Disbursements

a. Dates

Initial Disbursement 4 September 2013	Final Disbursement 19 December 2018	Time Interval 63 months
Effective Date 5 June 2013	Actual Closing Date 2 Jan 2019	Time Interval 66 months

b. Amount (\$ million)

Category	Original Allocation (1)	Increased during Implementation (2)	Canceled during Implementation (3)	Last Revised Allocation (4=1+2-3)	Amount Disbursed (5)	Undisbursed Balance (6 = 4-5)
Works	249.30		18.94	230.36	225.10	5.26
Goods	0.10			0.10	0.02	0.09
Consulting services	2.60		2.06	0.54	0.42	0.12
Total	252.00		21.00	231.00	225.54	5.47

Source: Asian Development Bank.

C. Project Data

1. Project cost (\$ million)

Cost	Appraisal Estimate	Actual
Foreign exchange cost	341.00	292.93
Local currency cost		
Total	341.00	292.93

2. Financing plan (\$ million)

Cost	Appraisal Estimate	Actual
Implementation cost		
ADB financed	252.00	225.54
Borrower financed	89.00	67.39
Total implementation cost	341.00	292.93

ADB = Asian Development Bank.

3. Cost breakdown by project component (\$ million)

Component	Appraisal Estimate	Actual
Road connectivity	244.96	219.85
Institutional development	4.32	5.26
Consulting services	2.63	0.43
Equipment and software	0.09	
Total	252.00	225.54

4. Project Schedule

Item		Appraisal Estimate	Actual
A.	Project Preparation		
	Loan processing and approval by ADB	Q3 2011–Q2 2012	Q4 2011–Q1 2012
	Loan signing and effectiveness	Q2 2012–Q3 2012	Q2 2013–Q2 2013
B.	Road Infrastructure Development		
	Procurement (civil works, roads)	Q1 2012–Q2 2015	Q2 2012–Q1 2017
	Construction (roads)	Q4 2012–Q4 2015	Q3 2012–Q1 2018
	Maintenance and defect liability period (roads)	Q1 2014–Q4 2020	Q3 2014–Q3 2021
C.	Institutional Development		
	Procurement (civil works, roads, RCTRCs)	Q1 2013–Q3 2013	Q2 2015–Q2 2017
	Construction (RCTRCs)	Q3 2013–Q3 2014	Q2 2015–Q2 2018
	Procurement (civil works, RRNMUs)	Q4 2012–Q2 2013	Q2 2015–Q2 2017
	Construction (RRNMUs)	Q2 2013–Q3 2014	Q2 2015–Q2 2018
D.	Goods		
	Procurement and installation of equipment (RCTRCs)	Q1 2014–Q4 2014	Q3 2017–Q2 2018
	Procurement and installation of equipment (RRNMUs)	Q3 2013–Q3 2014	Q3 2017–Q2 2018
E.	Consulting Services		
	Recruit consultants (TSCs)	Q1 2010–Q2 2011	Q1 2014–Q4 2014
	Execution of consulting services (TSCs)	Q3 2011–Q4 2017	Q4 2014–Q4 2017
	Recruit consultants (PICs)	Q4 2010–Q1 2012	Q1 2011–Q3 2011
	Execution of consulting services (PICs)	Q2 2011–Q4 2017	Q3 2011–Q4 2019
	Recruit consultants (RCTRC rollout)	Q3 2013–Q1 2014	Q3 2017–Q1 2018
	Execution of consulting services (RCTRC rollout)	Q2 2014–Q3 2017	Q1 2018–Q4 2019
F.	Capacity Development Technical Assistance		
	Recruit consultants (RCTRC setup)	Q2 2012–Q4 2012	Q1 2018–Q4 2018
	Execution of consulting services (RCTRC setup)	Q4 2012–Q4 2013	Q4 2018–Q4 2019
	Recruit consultants (RRNMU support)	Q2 2012–Q4 2012	Q1 2018–Q4 2018
	Execution of consulting services (RRNMU support)	Q4 2012–Q2 2015	Q4 2018–Q4 2019

ADB = Asian Development Bank, PIC = project implementation consultant, Q = quarter, RCTRC = rural connectivity training and research center, RRNMU = rural road network management unit, TSC = technical support consultant.

5. Project Performance Report Ratings

Implementation Period	Single Project Rating
From April 2013 to 30 June 2013	Actual problem
From 1 July 2013 to 31 December 2013	Potential problem
From 1 January 2014 to 31 December 2014	On track
From 1 January 2015 to 31 December 2015	On track
From 1 January 2016 to 31 December 2016	On track
From 1 January 2017 to 31 December 2017	On track
From 1 January 2018 to 30 December 2018	On track
From 1 January 2019 to 30 June 2019	On track

D. Data on Asian Development Bank Missions

Name of Mission	Date	No. of Persons	No. of Person-Days	Specialization of Members ^a
Fact-finding	6–19 December 2011	4	56	t, s, e, c
Multitranchise financing facility appraisal	22 January–6 February 2012	4	48	t, j, s, e
Loan review 1	4–15 March 2013	5	60	t, t, s, e, c
Loan review 2	5–14 February 2014	4	40	t, o, a, c
Loan review 3	26 May–16 June 2014	3	15	o1, o2, o3
Special project administration	13–21 November 2014	4	25	o1, o2, o3, a
Midterm review	11 March–14 May 2015	5	31	o1, o2, a, c, x
Special project administration 1	13–14 July 2015	2	4	o, x
Special project administration 2	8 September–20 October 2015	4	29	o1, o2 a, c
Loan review 4	14 March–2 August 16	5	69	o, a, g, x
Special project administration 3	24 October–23 November 16	3	16	o1, o2, a
Special project administration 4	6–8 February 2017	1	3	A
Loan review 5	15–19 May 2017	3	15	o, a, x
Special project administration 5	10–12 October 2017	2	6	o, a
Special project administration 6	4–6 September and 23–26 October 2017	1	6	A
Special project administration 7	28–29 November 2017	1	2	A
Loan review 6	16–17 July 2018	3	2	o, a, f
Loan review 7	7–10 August 2018	2	8	o, a
Project completion review	30 October–2 November 2019	2	6	a, y

^a a = analyst, c = consultant, d = director, e = environmental specialist, f = financial specialist, g = gender officer, h = economist, i = project implementation specialist, j = counsel, k = control officer, o = project officer, p = procurement specialist, s = social and/or resettlement specialist, t = transport specialist, x = gender consultant, y = project completion review consultant.

I. PROJECT DESCRIPTION

1. The Government of India launched the Prime Minister's Rural Roads Program (PMGSY) on 25 December 2000 as a centrally sponsored scheme to provide all-weather access to unconnected eligible habitations in India's rural areas at an estimated cost of \$30.0 billion in 2006, revised to \$27.4 billion in 2014.¹ The PMGSY envisages connecting eligible rural habitations to reduce poverty (faster and more inclusive growth), expanding and strengthening rural infrastructure to accelerate agricultural growth and the rural economy, creating jobs, and promoting social development.² The PMGSY also endeavors to establish uniform technical and management standards and facilitate rural road policy development at the state level to support sustainable management of the rural roads network.³

2. The government in 2002, requested financial assistance from multilateral agencies to fund the resource gap in PMGSY implementation. The Asian Development Bank (ADB) provided assistance under the Rural Roads Sector I Project for \$400 million, completed in June 2009, and the Rural Roads Sector II Investment Program for \$750 million, completed in June 2014, providing all-weather access to 8,966 rural habitations.⁴ The \$800 million Rural Connectivity Investment Program (RCIP), a multitranche financing facility (MFF) comprising three tranches, was approved by ADB on 12 July 2012 to support the construction and upgrading to all-weather standard of 9,000 kilometers (km) of rural roads, benefiting 4,200 habitations in the states of Assam, Chhattisgarh, Madhya Pradesh, Odisha, and West Bengal. In response to the government's periodic financing request of 17 May 2012, ADB approved project 1, amounting to \$252 million. The loan agreement was signed on 2 April 2013 and declared effective on 5 June 2013.

3. The long-term impact of the investment program was reduced poverty and deprivation, and inclusive socioeconomic growth. The expected outcome of the project was improved and sustainable connectivity of rural communities in the program states to markets, district headquarters, and other centers of economic activity (footnote 2). The program's six outputs combined to address road infrastructure development, maintenance, and institutional strengthening.

II. DESIGN AND IMPLEMENTATION

A. Project Design and Formulation

4. The project was formulated to support the implementation of the government's PMGSY flagship scheme that guided the project scope and standard operating procedures. The project design and formulation were relevant to Government of India and ADB sector strategies at appraisal, and they remained relevant at completion. The project was aligned with ADB's country partnership strategy for India, 2009–2012, as it assisted the government to achieve its goal of providing all-weather road connectivity for rural communities.⁵ It was also aligned with the government's development priorities in the Twelfth Five Year Plan, 2012–2016 to achieve faster,

¹ Eligible habitations in the PMGSY include those with a population of 500 or more in plain areas, and 250 or more in hill states and tribal and desert areas. Government of India, Ministry of Rural Development (MORD), Rural Connectivity Division. 2014. *PMGSY Briefing Book*. Delhi.

² ADB. 2012. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranchise Financing Facility, Technical Assistance, and Administration of Technical Assistance to India for the Rural Connectivity Investment Program*. Manila.

³ PMGSY. [Online Management, Monitoring and Accounting System](#).

⁴ ADB. 2011. *Completion Report: Rural Roads Sector I Project in India*. Manila; and ADB. 2018. *Completion Report: Rural Roads Sector II Investment Program (Project 5 and Multitranchise Financing Facility) in India*. Manila.

⁵ ADB. 2009. *Country Partnership Strategy: India, 2009–2012*. Manila.

inclusive, and sustainable growth.⁶ It was also included in ADB's country operations business plan for India, 2011–2013.⁷ The project at completion was aligned with the PMGSY and remains relevant to ADB's regional and country partnership strategies, Sustainable Development Goals, and national development priorities (para.33) .

5. At appraisal, the design was appropriate to achieve the expected outcome. The project, in its formulation, was guided by lessons from previous ADB rural roads projects, including (i) creating institutional processes to promote sustainability of assets, (ii) strengthening institutional capacity for rural road development, (iii) incorporating road safety audits and community road safety awareness, (iv) monitoring sex-disaggregated indicators and gender-related project benefit assessment studies, and (v) applying lessons and good practices in safeguard compliance monitoring. ADB provided adequate project preparatory technical assistance (TA) in the design phase to review institutional arrangements and capacities, recommend measures to improve road safety, assess project feasibility, support project readiness (including safeguards compliance), finalize the design and monitoring framework (DMF), and facilitate on-the-job training and knowledge transfer to project staff.⁸ The implementing agencies in the program states organized consultations with diverse stakeholders and conducted transect walks to finalize the road design, alignments, and safety features. As the subprojects were at a high level of readiness, the MFF modality was adopted instead of sector lending. The MFF modality was also suitable because it (i) supported the PMGSY long-term investment plan, and (ii) enabled flexibility in aligning the project with the PMGSY performance targets in the program states.

6. The performance indicators defined in the DMF at appraisal were aligned to the PMGSY annual targets for priority rural road construction and maintenance in the program states. The DMF included indicators on institutional capacity development (establishment of rural connectivity training and research centers [RCTRCs]), sustainable management of assets (establishment of rural road network management units [RRNMUs]), road safety audits, community awareness, and women's participation. The DMF performance indicators included readily available, measurable, and sex-disaggregated targets. While the results chain for the DMF was logical, there were issues related to the following: (i) indicators were duplicated and poorly formulated,⁹ and the design phase activities should have been omitted;¹⁰ (ii) habitation and road length performance targets were not revised with packages (para. 19); and (iii) DMF-linked RRNMU female staff targets were revised in the gender action plan (GAP) and not the DMF, as the guideline on target revision (provided in the facility administrative manual) was specific only to the project GAP (para. 28). A minor change in scope, well within the influence of the project, was made (paras. 19 and 34). The project achievements are in Appendix 1.

B. Project Outputs

7. The expected outputs included the following: (i) selected priority rural roads are constructed to all-weather standard; (ii) quality of design of RCIP roads is improved; (iii) maintenance of RCIP roads is improved and sustainable; (iv) road safety measures are incorporated into the life cycle of RCIP roads; (v) the qualifications and skills of PMGSY engineers, technicians, site supervisors, *panchayati raj* institution (PRI) staff, design consultants, and contractors in the program states are improved and maintained; and (vi) effective project

⁶ Government of India, Planning Commission. 2012. *Twelfth Five Year Plan, 2012–2017*. Delhi.

⁷ ADB. 2010. *Country Operations Business Plan: India, 2011–2013*. Manila.

⁸ ADB. 2009. *Technical Assistance to India for Preparing the Third Rural Road Sector Investment Program*. Manila

⁹ The same indicator was used for the impact and outcome, and the outcome and impact indicators did not articulate the change, or the impact expected from the project.

¹⁰ Transect walks a design phase activity, was carried out before project effectiveness.

management is provided.¹¹ The project delivered on the planned outputs and achieved the envisaged performance indicator targets (Appendix 1). A brief summary of achievements is included in paras. 8–14.

8. **Output 1.** The project achieved construction of 3,782 km¹² of priority rural roads (against the performance target of 3,461 km at appraisal) benefiting 1,785 rural habitations (against the appraisal target of 1,600 habitations). All civil works contracts of project 1 incorporated a 5-year performance-based maintenance contract. State wise targets at appraisal and physical achievement at completion is at Appendix 11.

9. **Output 2.** All project 1 roads were compliant to a standardized detailed project report (DPR) template. The PMGSY quality control norms and checklists were strictly adhered to, and 100% of affected communities were consulted in the design process, including 100% identified vulnerable and female-headed households (against the DMF target of 30%). The RCIP DPR template was approved by the National Rural Infrastructure Development Agency (NRIDA)¹³ and adopted uniformly for the PMGSY (para. 14). Though the DPR template included provisions for planning, design, and costing customized to the on-site requirements (including drainage, utility relocation, pavements, and land acquisition), these were not fully incorporated in the design and estimates, resulting in (i) a mismatch between cost estimates and actual expenditure in low-lying areas, leading to rebids, delays, and dropping of packages; and (ii) poor quality road design that affected road sustainability, as drains were not constructed (para.51).

10. **Output 3.** Project 1 incorporated lessons from previous ADB rural road projects, recognizing the importance of improving business procedures covering the life cycle of rural roads (para. 5). Five RRNMUs, one in each program state, were established on a pilot basis. The RRNMUs support the SRRDAs in preparing estimates to cover operation and maintenance requirements. The participation of PRIs and village grievance redressal committees (GRCs) in the maintenance phase was visibly lacking, impacting community ownership of assets. The pilot RRNMUs were fully equipped, substantially staffed, and operational. Of total road maintenance, 44% was conducted by women, surpassing the 33% target at appraisal, and RRNMU staff gender targets were revised in the midterm review mission (para. 28; and Appendix 10).

11. **Output 4.** The road design and upgrade was responsive to the needs of vulnerable road users. Based on the recommendations of prior rural road projects, road safety audits and a community awareness component were incorporated in the project, and 10% targets were fixed at appraisal (para. 5). At completion, more than 10% of project designs in program states underwent road safety audits (RSAs) based on standardized checklists and were improved accordingly. The RSAs have assisted in enhancing road safety measures, but the scope was limited only to the 10% sample roads. The road safety issues, therefore, may have remained unaddressed for those that were not audited. The project completion report mission observed inadequate road safety components in roads that fell outside the purview of RSAs (para.52).

12. **Output 5.** The RCTRCs, equipped with state-of-the-art research equipment and testing laboratories, were crucial to institutional capacity development. These centers were established

¹¹ A *panchayat* is an institution of self-government constituted for rural areas under Article 243-B of the Constitution of India. The three levels of panchayat comprise gram panchayat at village level, intermediate panchayat at block level, and zilla Panchayat/parishad at district level. These panchayats are collectively called '*Panchayati Raj Institutions*' (PRIs).

¹² The outputs exceeding the original targets were financed through savings and reallocations.

¹³ The name of the National Rural Road Development Agency was changed to the NRIDA in May 2018.

on a pilot basis in all five program states to strengthen staff capacities within state rural roads development agencies (SRRDAs) in aspects related to road network design, construction, management, and maintenance. By the end of September 2019, the RCTRCs had implemented 119 capacity development programs for SRRDAs' staff, contractors, and consultants, imparting training to 3,759 participants, including representatives from 16 PRI (37% of whom were women).¹⁴ The executing agency developed a training needs assessment portal that can be accessed by staff, contractors, and consultants for training registration. The RCTRC in Madhya Pradesh initiated a self-sustaining business model by using the RCTRCs' laboratory testing and training facilities for commercial purposes. As of 30 October 2019, the facility had grossed a net profit of \$0.2 million.¹⁵ The RCTRCs in the program states are also taking steps to achieve fiscal sustainability. The TA consultant prepared a working paper on the development of a model for self-sustainable stand-alone RCTRCs with recommendations on sustenance. Many strategies, including a staffing and human resource development component, were subsequently rolled out with success in the RCTRCs. Based on the recommendations of the working paper on self-sustenance, the NRIDA has awarded contracts for consultant services to the five RCTRCs to conduct training needs assessments in 14 non-program states.¹⁶ RCTRC staff members are government officers with extra responsibilities. Additional administrative and management duties constrain the staff time commitment and impacts RCTRC management.

13. **Output 6.** The RCIP performance targets and indicators were systematically monitored and achieved. The executing agency submitted consolidated quarterly progress reports to ADB. Given the large numbers of road sections, a quarterly monitoring frequency was limiting. Instead, a monthly reporting frequency would have been more effective in monitoring physical and financial achievements and timely resolution of issues. Lack of a dedicated project management unit at the NRIDA, as an interface between ADB and the program state implementing agencies, also impacted quality reporting. At the grassroots level, the village GRCs were constituted as a social accountability mechanism for monitoring and oversight. However, the role of the village GRCs was limited only to the construction phase, and their performance was inconsistent because of the lack of centralized monitoring and the weak capacities of members.

14. **Innovations and good practices.** Several good practices were piloted and scaled up:

- (i) A standard DPR format, with safeguard provisions, was introduced in project 1 and scaled up for the entire PMGSY. The DPR review system at the SRRDAs has resulted in quality DPRs and in minimizing omissions and errors in the bill of quantity process.
- (ii) Environment-friendly and cost-effective practices were adopted, such as the use of cold mix bitumen and plastic waste in pavement construction.
- (iii) The Madhya Pradesh RCTRC developed a website with an integrated web solution for effective training practices, including e-learning and e-library modules. The RCTRC also signed memoranda of understanding with national academic institutions to extend training courses and undertake research work. Program state RCTRCs are providing trainings to engineering colleges, consultants, and contractors and are opening laboratory access to contractors for testing materials.

¹⁴ The training needs of 5,389 participants were identified and the training modules were designed based on the training needs assessment findings.

¹⁵ ADB (South Asia Department). 2019. Project Completion Review Mission. Back-to-office report. 30 October–2 November (internal).

¹⁶ The Assam RCTRC is to conduct the assessments for Meghalaya ; the Chhattisgarh RCTRC for Uttar Pradesh and Uttarakhand; the Madhya Pradesh RCTRC for Gujarat, Himachal Pradesh, Maharashtra and Rajasthan; the Odisha RCTRC for Andhra Pradesh, Jharkhand, and Telangana; and the West Bengal RCTRC for Bihar, Sikkim, and Tripura.

- (iv) The Madhya Pradesh RCTRC developed and piloted a training module for PRI representatives on social and gender-responsive design, construction, and maintenance of rural roads.

C. Project Costs and Financing

15. At appraisal, the total cost of the project was estimated at \$341 million, with an ADB loan component of \$252 million comprising 73.9% of total investment. The government financed \$89.0 million toward land acquisition, utility shifting, and project implementation consultant costs, inclusive of \$16.1 million toward taxes and duties. The program state governments were to finance the cost of utility shifting and social mitigation out of the counterpart-financed component.

16. At completion, a total loan amount \$225.54 million was financed by ADB, with a \$67.39 million contribution from the Government of India. Of the amount financed by ADB, \$37.85 million was for Assam, \$56.70 million for Chhattisgarh, \$74.00 million for Madhya Pradesh, \$44.83 million for Odisha, and \$11.73 million for West Bengal. ADB allowed \$13.51 million in withdrawals from the loan account prior to the loan effective date for reimbursement of eligible expenditures incurred under the project in connection with works and consulting services. The cost reconciliation indicates that the uncommitted funds or savings in the loan were because of (i) 17.6% appreciation of the United States dollar against the Indian rupee over the loan period, (ii) savings under contracts during implementation, (iii) the termination of certain contracts, and (iv) savings as retention money and performance security was not released to the contractors and therefore remained unspent at the time of contract closure. Despite the cost underrun, project results were enhanced with the additional 55 packages worth \$12.75 million (para. 19).

17. ADB approved requests by the Department of Economic Affairs for partial loan cancellation of uncommitted amounts of \$13.0 million on 10 March 2017 and \$8.0 million on 6 June 2018. At project financial closing, ADB canceled \$5.47 million that had remained undisbursed. The ratio of the ADB loan to the Government of India contribution changed from 73.90:26.10 at appraisal to 76.99:23.01 at completion. Appendix 2 details the appraised and actual project costs.

D. Disbursements

18. At loan closing, \$225.5 million had been disbursed under the loan, 10.5% less than the loan amount of \$252.0 million at appraisal. The initial disbursement was made on 4 September 2013 and the final disbursement was on 19 December 2018. The initial disbursement for project components in Chhattisgarh was made in September 2013; for Assam, Madhya Pradesh, and Odisha in October 2013; and for West Bengal in December 2013. Of the total project loan, 13% was disbursed in 2013; 77% disbursed by the original loan closing date (31 December 2015) and 80% of the road construction contracts were complete by then. Several external and project-related factors contributed toward low disbursement at project closure (para. 19. and para. 21). The annual disbursement details are presented in Appendix 3.

E. Project Schedule

19. At appraisal, the project was to be completed in about 31 months by 31 December 2015 however, the project outputs were considered completed after 60.6 months by the end of 2018. The loan was made effective on 5 June 2013 and the project was extended twice at the borrower's request to 31 December 2017 and then to 30 June 2018. The project at its first extension included

a minor change in scope, approved on 3 June 2015.¹⁷ The first extension for 24 months was because of (i) the shifting of 55 packages (involving 131 roads and totaling 355 km) from RCIP project 3 (Loan 3306) to project 1; and (ii) the delayed completion of pilot RCTRC and RRNMU works because of the late award of building contracts. The second extension for 6 months was approved to ensure continuity of the technical support consultant (hired under the project) to provide support to RCIP projects 2 and 3.¹⁸

20. The contracts for most road construction works were awarded by 31 December 2014 and were complete by the original loan closing date. However, the procurement for RCTRC and RRNMU buildings was delayed because of time overruns related to (i) finalization of the bid documents;¹⁹ (ii) acquisition of land for construction; (iii) securing of the necessary permits and approvals; and (iv) cancellation of tenders and rebidding of works, furnishings, and equipment because of changes caused by the introduction of a goods and services tax by the Government of India.

21. Several state-specific factors contributed toward slow progress and associated delays related to (i) the non-availability of quarry material at source because of mining prohibitions; (ii) multiple contracts awarded to a single contractor, overstretching implementation capacity;²⁰ (iii) a longer rainy season; (iv) the suspension of the bidding process and works because of enforcement of a model code of conduct during elections; (v) security issues on project sections because of extremism; (vi) central fund disbursements to state governments, resulting in late payments and slow physical progress in Assam, Odisha and West Bengal; (vii) cyclone Phailin in Odisha, which adversely affected works from October 2013 to March 2014; (ix) utility relocation; and (x) repeated bidding processes because of inadequate cost estimates and poor responses to bids. In addition, the inclusion of additional packages 6 months before the original loan closing date also affected the delivery (para. 19).

F. Implementation Arrangements

22. The project's implementation arrangements proved appropriate to deliver the project outputs and achieve the envisaged outcome. As per the implementation arrangements for the MFF envisaged at appraisal, the RCIP was executed by the Government of India's Ministry of Rural Development (MORD), and the state governments of Assam (through its public works department); Chhattisgarh, Madhya Pradesh, and West Bengal (through their departments of *panchayat* and rural development); and Odisha (through its department of rural development). Separate project agreements were also signed between ADB, the MORD, and state implementing agencies.

23. At project appraisal, the implementing agencies were expected to establish project implementation units (PIUs) in the program states. For the project, 110 PIUs were created and functional (35 in Assam, 16 in Chhattisgarh, 38 in Madhya Pradesh, 17 in Odisha, and 4 in West Bengal). The implementing agencies appointed and supervised project implementation

¹⁷ On 16 December 2011, the director general of ADB's South Asia Department delegated the authority to ADB's country director in India for the approval of requests related to minor changes in scope under the project; this decision became effective on 1 January 2012.

¹⁸ The technical support consultant was engaged under the project for institutional setup of buildings, training on road safety, quality monitoring, and implementation of road safety measures.

¹⁹ The NRIDA submitted the final bid documents for RCTRC and RRNMU construction of buildings on 26 March 2014 for ADB's approval. The finalized bid documents for procurement of supply, delivery, and installation of equipment were submitted on 1 May 2014 and were approved by ADB on 8 May 2014.

²⁰ As these were rural road packages, only a few local contractors were available for small-value contracts. Non local contractors were not interested in small-value and geographically dispersed packages.

consultants (PICs) for routine project support. The project was implemented with 643 contract packages for civil works, goods supply, and consulting services. Of these, 145 were in Assam, 95 were in Chhattisgarh, 186 were in Madhya Pradesh, 186 were in Odisha, 27 were in West Bengal, 3 were for individual consultants, and 1 was for a capacity building consultant.

24. A project coordination committee was set up during implementation with the joint secretary of the MORD as the chairperson and senior officials of the MORD; the NRIDA; the Department of Economic Affairs; and the governments of Assam, Chhattisgarh, Madhya Pradesh, Odisha, and West Bengal as members. The committee served as an effective oversight mechanism. The NRIDA engaged technical supervision consultants to assist the state governments in implementing road safety measures, conduct maintenance, monitor safeguard compliance, and conduct impact monitoring of the RCIP.

G. Technical Assistance

25. As part of the MFF, ADB approved a TA which allowed for the engagement of a capacity development consultant to support the pilot RCTRCs and RRNMUs.²¹ The consulting services were mobilized in 2014 and ended in December 2017. Upon the NRIDA's request, ADB approved a minor change in scope and reallocation of the TA budget to support the preparation of a road safety manual for rural roads.²² The TA established the business rules of RCTRCs and RRNMUs. The project developed operation manuals, road condition data surveys, and strengthened performance monitoring systems that were scaled up for the entire PMGSY program. The TA draft final report was submitted in May 2015 and the completion report will be part of the MFF completion report.

H. Consultant Recruitment and Procurement

26. Recruitment of international consultants was using quality- and cost-based selection and ADB's Guidelines on the Use of Consultants (2007, as amended from time to time; March 2013 edition). It was envisaged at appraisal that 200 person-months would be committed toward the capacity development consultant. The consultant mobilized international and national staff (totaling 300 person-months) upon ADB's approval. Quality and timely deliverables were executed as per the contract terms of reference. However, a delay in the submission of bidding documents for buildings and equipment resulted in procurement setbacks (para. 20). Capacity development and cross-learning workshops in aspects related to operations, business practices, procedures, and rural road training were organized for RCTRC and RRNMU staff.²³ A PIC was appointed by the implementing agencies in the respective states to assist with environmental and social safeguards, the GAP, and road safety compliance monitoring of road safety measures. Because of the delays in implementation, the states extended PIC inputs beyond the original contract period. The outputs from consultants significantly contributed to project implementation (para. 25).

²¹ The consulting services were financed under a capacity development TA project associated with the RCIP. ADB. 2013. *Technical Assistance to India for Institutional Development for Rural Roads Asset Management: Support to the Establishment of Rural Road Network Management Units and Rural Connectivity Training and Research Centers*. Manila. The associated capacity development TA was approved on 5 June 2013.

²² On 20 March 2014, the executing agency requested, and ADB approved, a minor change in scope, and the TA budget was reallocated on 28 July 2014.

²³ ADB. 2015. *Draft Final Project Report, TA 8110-IND*. Manila.

27. Procurement of works, goods, and services was in accordance with ADB's Procurement Guidelines (2007, as amended from time to time).²⁴ The procurement process experienced delays because of the lack of bid response and the poor quality of bidders.

I. Gender Equity

28. Project 1 was categorized effective gender mainstreaming and included a project GAP with 15 activities and 10 quantitative targets. The combined GAP and DMF gender targets totaled 12. Sector-specific gender issues, assessed in the preparatory phase, informed the project design, and were addressed through the actions listed in the GAP. The gender strategy followed a multipronged approach and included (i) provisions to promote equitable employment opportunities, (ii) protective measures for vulnerable female-headed households, (iii) gender-responsive road safety features, (iv) equitable representation in decision-making and planning, and (v) gender-responsive institutional capacity building. The project defined the GAP implementation modalities, partnerships, human resource requirements, and monitoring mechanisms. Uniform GAP targets (without baselines) were assigned for the five program states. In anticipation of the problem that this target-setting would create, the facility administration manual included a provision allowing the program states to establish state-level targets based on the midterm review. The target related to RRNMU female staff was also reassessed and adjusted in the range from 5% for Madhya Pradesh to 10% for Assam. These were revised during the midterm review mission (paras. 5–6; and Appendix 10).²⁵ As per recommendations from prior rural road projects, a gender equality results case study, showcasing gender-related project benefits, was published (para. 5).²⁶ All GAP activities were efficiently implemented and systematically reported (Appendix 10).

J. Safeguards

29. The project was classified category B for environment and category C for involuntary resettlement and indigenous peoples as per ADB's safeguard policies.²⁷ The environmental assessment and review framework and the environmental management plan were developed based on the initial environmental examination and environment code of practice checklist.²⁸ All subprojects in the program states complied with the provisions in the environment management plan. The project adopted a voluntary land donation system and developed a community participation framework (CPF) during loan processing and organized consultations with affected communities. Subproject selection was based on PMGSY criteria and the CPF established the social safeguard guidelines (supplemental to the PMGSY guidelines), detailing the procedural steps and requirements to be followed for all subprojects. Strict compliance with the applicable provisions under the CPF was ensured and monitored by the PIUs and PICs in the program states. The technical supervision consultant carried out external monitoring to review completed CPFs with site verifications.

²⁴ ADB approved necessary changes to procurement methods at appraisal to assist with project implementation.

²⁵ RRNMU female staff targets were revised in the GAP and not the DMF.

²⁶ ADB. 2019. *India Gender Equality Results Case Study—Rural Connectivity Investment Program: Connecting People, Transforming Lives*. Manila.

²⁷ ADB. 2002. *Environment Policy of the Asian Development Bank*. Manila; ADB. 1995. *Involuntary Resettlement*. Manila; and ADB. 1998. *The Bank's Policy on Indigenous Peoples*. Manila.

²⁸ The environment code of practice checklist was finalized under project 1 of the Rural Roads Sector II Investment Program and included a scoping of key environmental features and anticipated environmental impacts from the upgrading or construction of rural roads. The PICs completed the environment code of practice checklist based on site visits, and it was included in the DPRs and bidding documents.

30. The environmental safeguards procedures and documentation in the environmental assessment and review framework were strictly followed by the PIUs despite the challenges posed by the large number of similar, short, and geographically dispersed road projects.²⁹ The environmental monitoring report from the executing agency confirmed the competence of the PIUs and PICs in overseeing the environmental monitoring plan implementation and recording of noncompliance related to debris management, dust suppression, compensatory plantation, hot mix plant permit, and traffic management; the SRRDAs issued noncompliance notices through the PIUs within 1 week of receiving the monitoring reports. The noncompliance notices covered issues for each violation, with corrective instructions and deadlines for actions. Safeguard provisions are also incorporated in the DPRs (para. 14) and included in contract documents. However, these were not fully adhered to by the contractors primarily because of low awareness and the non-inclusion of these provisions in the bill of quantities. No issues related to environmental and social impacts were reported to ADB, and none were noted in back-to-office reports and aide-mémoires. Overall, safeguard compliance management was rated *effective*.

K. Monitoring and Reporting

31. The borrower complied with all 36 loan covenants. The executing and implementing agencies implemented the project activities efficiently with due diligence in all aspects, and in accordance with the PMGSY guidelines. The executing agency submitted consolidated quarterly project progress reports to ADB. The state implementing agencies, with assistance from PICs, prepared the project performance monitoring systems with baseline data within 3 months from project effectiveness. The indicators in the monitoring system were periodically updated. The project could have benefited from a monthly reporting frequency and the services of a central project management team at the NRIDA to assist in coordinating between the states, facilitating robust monitoring systems, and producing quality reports (para. 13).

32. Independent chartered accountants audited the financial accounts and statements, and the audited financial reports were submitted to ADB by the executing agency. The implementing agencies reported the progress during review missions and consulted ADB where necessary. The audit report format was, however, not in accordance with the one agreed between the comptroller and auditor general of India and ADB. Based on the recommendations on compliance, the reporting format was modified. The status of compliance with loan covenants is in Appendix 7.

III. EVALUATION OF PERFORMANCE

A. Relevance

33. The project is rated *relevant* to the borrower's development objectives and ADB's country and sector strategies at appraisal and completion. The project's formulation was aligned with the government's development objectives, ADB's country partnership strategy 2009-2012 (para. 4). At completion, the project remained relevant to the government's Strategy for New India @ 75, which focuses on rural infrastructure and implementation of the flagship schemes,³⁰ and the Rural Road Development Plan: Vision 2025, which envisages the need to mobilize resources to accelerate the pace of accessibility to villages to improve the socioeconomic well-being of rural people and to proceed toward achieving the Sustainable Development Goals.³¹ At completion,

²⁹ Government of India, NRIDA. 2017. *Environmental Monitoring Report*. Delhi.

³⁰ Government of India, National Institution for Transforming India 2018. *Strategy for New India @75*. Delhi.

³¹ Government of India, Ministry of Rural Development. 2007. *Rural Road Development Plan: Vision 2025*. Delhi. Asian Development Bank. 2018. *Strategy 2030. Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*.

the project remained relevant to ADB's Strategy 2030, which identifies rural development and food security as key operational priorities and focuses on rural network development to promote efforts to improve market connectivity and agricultural value chain linkages.

34. The project was able to incorporate lessons from previous rural road projects (para. 5). The project design, implementation arrangements, and innovations (para. 4; para. 5; para. 6; para. 14; and paras. 22–23) added to the project relevance. The project incorporated a minor change in scope through the inclusion of additional packages and two loan extensions to effectively utilize the savings and ensure full achievement of project outcomes, and to maintain the relevance of the project (para. 19). The MFF was the most suitable modality and the DMF, notwithstanding a few issues, was logical, appropriate, and relevant, reflecting the government's rural road development objectives (paras. 5–6). The project complemented the initiatives of the World Bank, funding the PMGSY, through a coordinated approach and clear geographical delineation of investments.

B. Effectiveness

35. The project is rated *effective* in achieving its outcome targets. At completion (compared to the targets envisaged at appraisal), the project exceeded the outcome performance target for rural habitations by 11% and the output target of road network length by 9% (paras. 8–14; and Appendix 1).³² However, the project experienced state-specific implementation delays and differences in achievements. The road network exceeded by 25% than envisaged in Assam and Madhya Pradesh, while it was short by 7% in Odisha and 11% in West Bengal than envisaged (Appendix 11). Improved road access has enhanced the quality of life for rural communities in the program states. The qualitative aspects of improved connectivity in the program states indicate that it has contributed to (i) increased income for households engaged in farming, trading, transport, and other services; (ii) improved access to health facilities and improved community awareness; and (iii) improved access to quality education and other development schemes. The project has also influenced the expansion and growth of women-centered traditional occupations and empowered women groups to demand increased value on products developed by them.³³ The average travel speed for vehicles in project roads increased from 10–15 km per hour to about 25–30 km per hour, leading to improved access to markets for agricultural produce.³⁴ The state government data on procurement and public distribution of rice indicate that there was a 30% increase in the quantity of rice procured from Odisha, a 26% increase for Madhya Pradesh, and a 42% increase for West Bengal from 2013–2014 to 2016–2017.³⁵

36. The project is considered effective, as the targets for more than 90% of project 1 investments and all indicators (except one) were achieved. Under the institutional development component, at completion, the project had achieved fully operational RCTRCs and RRNMUs in each program state and has substantially achieved the output targets envisaged at appraisal (para. 10; and para. 12). The project also promoted innovations and good practices, which enhanced the effectiveness in achieving the outcome targets. Safeguards compliance and GAP implementation were also assessed successful (para. 14; and paras. 28–30). All GAP activities were completed and 92% of the combined GAP and DMF targets were achieved. GAP activities

³² The targets also exceeded because 55 additional packages were transferred from project 3.

³³ ADB. March 2019. India Gender Equality Results Case Study- Rural Connectivity Investment Program, Connecting People, Transforming Lives.

³⁴ Based on average speeds from detailed project reports for various project roads prepared before appraisal and average speeds reported in discussions during the project completion report mission to program states.

³⁵ Government of India, Ministry of Agriculture and Farmers Welfare, Department of Agriculture, Cooperation and Farmers Welfare, Directorate of Economics and Statistics. 2017. *Pocket Book of Agricultural Statistics*. Delhi.

resulted in practical and strategic benefits for women and enabled institutional gender capacities (Appendix 10).

C. Efficiency

37. The project investment is rated *efficient*. The project experienced delays in completion because of external factors, although they did not affect the project's efficiency (paras. 19–21). The project contributed to direct measurable benefits such as vehicle operating savings and value of time savings. The economic internal rate of return (EIRR) was calculated to assess efficiency in achieving project outputs and outcomes. At appraisal, the project EIRR for a majority of the sample road sections identified for the analysis, was more than 10%, with variations between different states (Appendix 11). The EIRR for the overall project at appraisal was not available. At completion, an economic reevaluation (using the same concept and principles applied at appraisal) estimated the EIRR for the overall project as 17.69% with slight variations by state. At appraisal, of the 96 individual road sections analyzed, the EIRRs for 14 sections were estimated to be less than 10%, while at completion, only 6 of these 96 sections had EIRRs less than 10%. A sensitivity analysis was carried out to investigate the robustness of the economic viability of the project to changes in costs and benefits. For all sensitivity scenarios at completion, the EIRR remained well above 12% indicating the economic efficiency of the project (Appendix 8). The additional 55 packages also contributed toward the project's efficiency (paras. 16 and 19).

D. Sustainability

38. Overall, the project is rated *likely sustainable*. Rural infrastructure development is an ongoing government of India development priority with strong political commitment at the national and state level (para. 33). As a nonrevenue investment, the RCIP is not designed for capital cost recovery. The investment has contributed to social and economic benefits through increased agriculture incomes, improved rural livelihoods, access to social services, and poverty reduction (para. 35; and Para. 41). The state governments are required to ensure funding for maintenance functions during and after the 5-year performance-based maintenance contract period. Twenty-six state governments notified rural road maintenance policies to enable maintenance, management, and sustainability of assets beyond the 5-year performance-based maintenance contract period. A subsequent 5 years of road maintenance work is contracted out in the fifth year of each performance-based maintenance contract and the RRNMUs support the SRRDAs to prepare annual maintenance plans and costing for approval and funding by state governments (para. 10). The plans are prepared following NRIDA guidelines on mobilizing additional funds for maintenance. Based on these norms, the recurring maintenance cost required for the roads financed under the project is estimated as \$17.68 million (Appendix 8). The cumulative road maintenance budget in the program states in fiscal year (FY) 2018 was \$381.65 million (\$47.66 million in Assam, \$26.95 million in Chhattisgarh, \$197.97 million in Madhya Pradesh, \$57.81 million in Odisha, and \$51.26 million in West Bengal), up 12.77% from FY2017. The comparison between the estimated maintenance costs for project roads and the cumulative road maintenance allocation in FY2018 indicates that the program states have adequate financial capacities to support the sustainability of assets.

39. The project is assessed to be environmentally and socially sustainable. Improved all-weather connectivity resulted in minimizing flooding and inundation events within habitations, resulting in better quality of life and enhanced access to economic and development benefits, without seasonal variations. The use of standard DPR formats will ensure that designs adopted for all road sections under the PMGSY will continue to be compliant with the technical, environmental, social, and road safety norms (para. 9; para. 14; and para. 29). The project

completion report mission observed that the project roads were maintained in good condition with regular monitoring from the PIUs, except for issues related to drain infrastructure because of land constraints (para. 9). The pilot RCTRCs and RRNMUs are crucial to institutional sustenance, as they continue to support (i) PIU technical and nontechnical staff in rural road, asset, contract, and finance management capacity building; (ii) SRRDAs' capacities for stronger planning, budgeting, policy formulation, monitoring, and research; and (iii) stakeholder engagement in rural road management, asset ownership, monitoring, and grievance redressal. Achieving fiscal sustainability through self-funded, revenue-generating capabilities and earning recognition as centers of excellence will further enhance the sustainability of the RCTRCs, RRNMUs and the project (para. 10; and para. 12). To better manage the PMGSY, the executing and implementing agencies and the PIUs have adopted strict quality control measures (such as national and state quality monitors which are centralized real-time online management, monitoring, and accounting systems and an app-based grievance redress system) to encourage community participation and oversight, and to enhance the sustainability of the project. The NRIDA, as a, professional, and multidisciplinary apex agency for rural road development, provides technical and management support to implement the PMGSY effectively, contributing toward sustainability.

E. Development Impact

40. The development impact of the project is rated *satisfactory*. The project has enabled and sustained connectivity of 1,787 rural habitations in the program states to markets, district headquarters, and other centers of economic activity. The project road sections provide reliable and safe access, without seasonal variations, impacting (i) crop diversification, reducing spoilage; (ii) per capita income; (iii) access to markets and nonagricultural jobs; and (iv) land value (footnote 28). The project has contributed significantly to the operational priorities 1, 2, 3, 5, and 6 of the ADB (Appendix 12).

41. The development benefits accrued from improved rural roads also include (i) better implementation and access to health, education, food security, and nutritional programs; (ii) increased economic opportunities for self-help groups and diversified opportunities for their participation in agriculture work; and (iii) safe mobility for women and girls and improved access to social and economic infrastructure and improved sanitation infrastructure. It is also evident that GAP activities resulted in direct benefits such as opportunities for female workforce participation, equitable employment, capacity development, gender-responsive infrastructure design, a voice in decision-making, and institutional gender capacity building (Appendix 10).

F. Performance of the Borrower and the Executing Agency

42. The performance of the borrower and executing agencies is rated *satisfactory*. The MORD, NRIDA and government agencies in Assam, Chhattisgarh, Madhya Pradesh, Orissa, and West Bengal worked closely with ADB in achieving the project outputs and provided adequate counterpart funding. They complied with all the covenants, albeit with delays. The payments to the contractors and consultants were delayed at times because of budget constraints. However, timely intervention from ADB and effective coordination with the state implementing agencies ensured successful project completion, including overachievements in relation to the output performance targets at appraisal.

G. Performance of the Asian Development Bank

43. ADB's performance is rated *satisfactory*. The project design and formulation at appraisal considered workable institutional arrangements for implementing the road infrastructure

component and guaranteed maintenance by the program states. ADB closely monitored physical and financial progress under each package and intervened in a timely manner to mitigate issues. This continued after the project was delegated to the India Resident Mission on 11 March 2014. ADB undertook necessary measures to make minor revisions to the loan agreement and support smooth implementation of the project activities. ADB conducted periodic review missions to the program states to assess progress, encourage compliance with loan covenants, monitor the achievements against the DMF and GAP performance targets, and undertake field visits.

H. Performance of Consultants, Contractors, and Suppliers

44. The performance of consultants and contractors was rated *satisfactory* in all the program states. The performance of the contractors with respect to the deployment of personnel and quality of outputs was satisfactory. During implementation, the civil works contractors faced challenges related to relocating utilities because of poor interagency coordination. The contractors also faced challenges because of security concerns in some subprojects. Overall, the performance of the contractors and PICs is rated satisfactory. In Assam, Odisha and West Bengal, the performance of the equipment suppliers was not adequate, as the installation process was delayed. The PICs provided adequate due diligence to ensure compliance with environmental and social safeguards, and the GAP. The PICs in Assam, Chhattisgarh, and Madhya Pradesh introduced standard templates for field-level (sex-disaggregated) data collection and introduced modules for on-site safeguards and gender trainings for contractors and supervisors.

I. Overall Assessment

45. The project was relevant to the government's overall development objectives and ADB's policies at appraisal and remained so upon completion. The project realized the immediate outcome of improved and sustainable connectivity of the rural communities in the program states to markets, district headquarters, and other centers of economic activity. The rapid socioeconomic development in the program states, increased traffic on the project roads, and the social impacts indicate the project's outcomes and outputs envisaged at appraisal were realized. The recalculated EIRRs were robust and the performance of contractors was satisfactory. Overall, the project is rated *successful* based on the assessment of its relevance, effectiveness, efficiency, and sustainability.

Overall Ratings

Criteria	Rating
Relevance	Relevant
Effectiveness	Effective
Efficiency	Efficient
Sustainability	Likely Sustainable
Overall Assessment	Successful
Development impact	Satisfactory
Borrower and executing agency	Satisfactory
Performance of ADB	Satisfactory

ADB = Asian Development Bank.

Source: ADB.

IV. ISSUES, LESSONS, AND RECOMMENDATIONS

A. Issues and Lessons

46. **Design and construction.** The project had the following design and construction issues: (i) poor coordination with state departments for utility shifting, land acquisition, and mandatory clearances, resulting in budget and time overruns; (ii) repeated bidding and multiple contracts, impacting the bidding process and construction pace; (iii) non-availability of construction material at source because of mining prohibitions, which escalated procurement costs and rendered the budget nonviable; and (iv) weak DPR capacities of consultants, resulting in poorly designed and costed road packages (para. 9; and para. 21).

47. **Maintenance.** The project had the following maintenance issues: (i) the limiting scope of the RSAs only to sample roads affected road safety provisions in non-sample roads, (ii) weak maintenance planning resulted in poor maintenance, and (iii) limited community involvement could affect sustainability (para. 11; and para.13).

48. **Monitoring and reporting.** The project had the following monitoring and reporting issues: (i) lack of a centralized project management consultant affected data consistency and quality of monitoring, and (ii) the village GRCs were not leveraged in the maintenance phase and the members lacked capacities to carry out the GRC functions effectively during construction (para. 10; para. 13; and para. 31).

49. **Pilot testing of innovative approaches.** The pilot RRNMUs and RCTRCs have strengthened technical and management capacities and promoted sustainable maintenance and management. The lack of dedicated human resources overstretches the time of government staff with additional responsibility to manage these establishments. This impacts the efficiency and sustainability of these institutions (para. 10; para. 12; para.14 and para. 39).

50. **Social safeguards and gender.** The project had the following social safeguards and gender issues: (i) low levels of awareness on safeguard provisions and the non-inclusion of these provisions in the billing of quantities affected timely adherence by contractors; (ii) the RRNMUs and RCTRCs lacked a policy on the prevention of sexual harassment, as mandated under law;³⁶ and (iii) there was no policy engagement to scale up gender mainstreaming across the PMGSY (para. 28; para.30 and Appendix 10).

B. Recommendations

51. **Effective contract management.** Effective contract management could be facilitated through the following: (i) identification of utilities, accurate cost estimation, and coordination with line departments in the design phase would ensure timely implementation (e.g., through the establishment of a state-level coordination mechanism); (ii) the size and number of packages to be awarded to a single contractor should be determined in close coordination with the PIUs; (iii) information should be made available on locally available construction materials; (iv) land acquisition for construction work and utility relocation, with necessary approvals, should be complete in all respects; (v) costing of packages should be strictly based on the on-site conditions to avoid rebids and delays in completion; and (vi) basic design requirements, including drainage,

³⁶ The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013

should be strictly adhered to; and (vii) safeguard provisions should be included in the billing of quantities(para. 46)

52. **Sustainable maintenance.** Sustainable maintenance could be facilitated through the following: (i) the RRNMUs should prepare a comprehensive action plan for road maintenance; (ii) community participation should be fostered to create ownership and effectively mitigate issues related to misuse and damage,³⁷ and the village GRCs should continue their oversight role during the maintenance phase; and (iii) there should be compulsory road safety audits for all the roads prior to the approval of the DPRs. The PRI and village GRC members could be involved in these audits and checklists on road safety components prepared to guide community-led audits (para. 47; and para. 48).

53. **Improved and future monitoring.** Improved monitoring could be facilitated through the following: (i) a project management team at the national level could assist the executing agency with real-time monitoring of physical and financial progress in each program state for consistent data collation, quality reporting, and timely mitigation of issues; (ii) the village GRCs should be strengthened to enhance their role; and (iii) a bottom-up complaint redress system (i.e., from villages to PIUs to SRRDAs to the NRIDA) should be established along with a centralized mechanism for monitoring the GRC functions (para. 48). For future monitoring, NRIDA should include a standard reporting template for operational aspects related to the assets created (RRNMUs and RCTRCs) and annual reports should be prepared by each RRNMU and RCTRC for submission to the NRIDA.

54. **Capacity development and knowledge sharing.** Capacity development could be facilitated through the following: (i) the RCTRCs should be optimally utilized for capacity building of local contractors in technical and nontechnical aspects; (ii) capacity building in ADB audit requirements should be provided for the finance staff to ensure audit compliance; (iii) RCTRCs should develop a comprehensive human resource plan for managerial, administrative, and academic staff positions; (iv) trainings for village GRC members and a mentoring component for women GRC representatives should be provided; (v) PRI trainings should be provided in RCTRCs; (vi) safeguard and gender orientation for contractors should be carried out; (vii) there should be policy interventions to scale up gender mainstreaming across the PMGSY based on the RCIP experience; (viii) future projects should integrate an awareness and research component on gender-based violence and trafficking; (ix) the NRIDA, in partnership with ADB and other funding agencies, should facilitate a PMGSY knowledge-sharing platform; and (x) a module on rural road management should be included in the training curriculum of state institutes of rural development.³⁸

55. **Covenants.** The retroactive financing covenant and post-procurement review covenant (sample-based) should be maintained, as these helps enhance the readiness criteria leading to the timely award of contracts and ensured quality control.

56. **Timing of the project performance evaluation report.** The project performance evaluation report should be prepared in 2021, by when the performance of fully operational RRNMUs and RCTRCs can be assessed.

³⁷ Models on community participation across local and global rural road projects should be studied and good practices adopted.

³⁸ The State Institute of Rural Development provide research and capacity development support to rural development officials, functionaries and stakeholders in the program states.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Indicators and Targets for project 1	Data Sources / Reporting mechanisms	Project achievements for five program states under project 1
Impact Connectivity of selected rural communities in five RCIP states to markets, district headquarters, and other centers of economic activity is improved and sustainable	By the end of the RCIP (2017): About 4,200 ¹ rural habitations (with at least 10% female headed households and 40% beneficiaries from vulnerable groups) are newly connected by all-weather RCIP roads under long-term PBMCs. Note: The performance target of 4,200 rural habitations is for the entire MFF. For project 1 the target is 1,600 habitations (as included under outcome indicator).	OMMAS ² Impact Monitoring and surveys by TSC	By the end of RCIP Project 1: 1,787 rural habitations against target of 1,600, with 10% female headed and 46% vulnerable households newly connected by all-weather roads under long-term PBMCs. ³ The achievement under the MFF will be assessed in the FCR.
Outcome Connectivity of selected communities in five RCIP states prioritized by PMGSY for 2012 sanction is improved and sustainable	By the end of the project 1 (2015): 1,600 rural habitations (with at least 15% female headed households and 40% habitants from vulnerable groups) are newly connected by all-weather RCIP roads under long-term PBMCs (254 in Assam, 447 in Chhattisgarh, 431 in Madhya Pradesh, 427 in Odisha, and 41 in West Bengal)	OMMAS Impact monitoring and surveys by TSC	Achieved. By the end of project 1 a total of 1,787 rural habitations with 10% female headed and 46% vulnerable households are newly connected by all-weather roads (295 in Assam, 447 in Chhattisgarh, 495 in Madhya Pradesh, 447 in Odisha and 101 in West Bengal).

¹ The habitation target as per the Report and Recommendation of President and Framework Financing Agreement.

² Online Management, Monitoring and Accounting System, NRIDA, New Delhi

³ The average female headed household (Rural) for the five states as per Census 2011 (Assam: 11%, Chhattisgarh: 10.8%, Madhya Pradesh: 7.2%, Odisha: 10.4% and West Bengal: 9.8%).

Design Summary	Performance Indicators and Targets for project 1	Data Sources / Reporting mechanisms	Project achievements for five program states under project 1
Outputs 1. Selected priority rural roads prioritized by PMGSY for 2012 sanction are constructed to all weather standard	By the end of the project 1 (2015): About 3,461 km of priority rural roads (300 km under PPP-based PBMCs) including in Assam (342 km), Chhattisgarh (1,008 km), Madhya Pradesh (1,187 km), Odisha (757 km), and West Bengal (167 km). are constructed to all-weather standards.	OMMAS	Achieved. A total of 3,782 km of priority rural roads (100% under PBMCs) were constructed and/or upgraded including in Assam (422 km), Chhattisgarh (1,007 km), Madhya Pradesh (1,492 km), Odisha (711 km) and West Bengal (150 km).
2. Quality of design of RCIP roads is improved	100% of road designs for project 1 roads follow standardized DPR template and undergo quality control with the use of quality control toolkit, and account for the climate change related impacts 100% of all affected communities along project 1 roads (at least 30% women) are consulted in the design process	Quality control checklists attached to DPRs Community design briefs as included in DPRs	Achieved. 100% road designs for project 1 roads follow standardized DPR template. Quality control toolkits were used for quality control and accounting for climate change related impacts. Achieved. 100% affected communities along project 1 roads including 1,539 (100%) identified vulnerable and female-headed households.

Design Summary	Performance Indicators and Targets for project 1	Data Sources / Reporting mechanisms	Project achievements for five program states under project 1
3. Maintenance of RCIP roads is improved and sustainable	<p>By the end of project 1 (2015): At least 5 RRNMUs (with at least 25% new staff as female staff) are established (1 in each state), fully operational and mainstream a public private partnership approach to the road maintenance, and mainstream a public private partnership approach to the road maintenance (at least 33% of which is conducted by women)</p> <p>Note: The target was reassigned in the mid-term review (para 6, 10, 32 and Appendix 10).</p>	<p>Government circulars and budget allocations</p> <p>Annual reports by RRNMUs</p> <p>PIC and TSC monitoring reports</p>	<p>Achieved. 5 RRNMUs with 12% female staff are established (1 in each state) and made fully operational. Currently the RRNMUs staff is deputed from the existing human resource pool of the implementing agency in each state.</p> <p>The civil works contracts have provision of 5-year maintenance responsibility.</p> <p>44% women were engaged as road maintenance workers and supervisors.</p>
4. Road safety measures are incorporated into the lifecycle of RCIP roads	<p>In the course of preparation of project 1 (2011): At least 10% of project 1 designs in Assam, Madhya Pradesh and Chhattisgarh undergo RSAs and improved accordingly, with emphasis on vulnerable road users.</p> <p>By the end of the project 1 (2015) in 5 RRNMU districts: As least 20% of designs and 10% of existing rural road network undergo RSAs annually and improved accordingly, with emphasis on vulnerable road users</p>	<p>Summary RSA reports by PICs, TSC, and RRNMUs</p> <p>Response reports by SRRDAs</p> <p>Summary RSA reports by PICs, TSC, and RRNMUs</p> <p>Annual reports on road safety works completed and response reports by SRRDAs</p>	<p>Achieved. Road safety report prepared by PICs and TSCs. More than 10% of Project designs in Assam, Madhya Pradesh and Chhattisgarh underwent RSAs and improved accordingly, with emphasis on vulnerable road users.</p> <p>Achieved. In 5 RRNMU districts 44% of design and 22% of existing road network that underwent RSA were improved with emphasis on vulnerable road users.</p>

Design Summary	Performance Indicators and Targets for project 1	Data Sources / Reporting mechanisms	Project achievements for five program states under project 1
5. Qualification and skills of PMGSY engineers, technicians, site supervisors, concerned staff of PRI, design consultants and contractors in RCIP states is improved and maintained	By the end of project 1 (2015): 5 RCTRCs are established, fully operational and completed training and certification of at least 300 PIU staff, 30 PRI staff (at least 30% women), 30 design consultants and 50 contractors	Government circulars and budget allocations RCTRC's training certification records	Achieved 5 RCTRCs are established and fully operational. Training and certification completed for 3,759 trainees (with 3,339 PIU and 154 PRU staff and 151 contractors and 115 design consultants). 16 PRI (37% women) were trained in social and gender responsive design, construction and maintenance of rural roads – role of <i>Panchayati Raj Institutions</i> .
6. Effective Project management provided	Each Tranche is approved as scheduled, and completed on time and within budget, All RCIPs performance targets and indicators are systematically monitored and achieved	OMMAS OMMAS PIC reports TSC reports	Partly Achieved. Tranche 1 was approved as scheduled. The completion was delayed by more than 3 years and cumulative cancellation of 10.5% of original loan amount (refer to para. 19 of main report) Achieved All RCIP performance indicators and targets were systematically monitored.

ADB = Asian Development Bank; DPR = detailed project report; km = kilometer; NRRDA = National Rural Roads Development Agency; OMMAS = online management, monitoring, and accounting system; PBMC = performance-based maintenance contract; PFR = periodic financing request; PIC = project implementation consultant; PIU = project management unit; PMGSY = *Pradhan Mantri Gram Sadak Yojana* (Prime Minister's Rural Roads Program); PPP = public-private partnership; PRI = *Panchayati raj* institution; RCTRC = rural connectivity training and research center; RRNMU = Rural Road Network Management Unit; RSA = road safety audit; SRRDA = state rural road development agency; TSC = technical support consultant.

Source: Asian Development Bank.

PROJECT COST AT APPRAISAL AND ACTUAL

Table A2.1: Project Cost (\$million)

Category		At Appraisal		Actual		
Item	Foreign Exchange	Local Currency	Total Cost	Foreign Exchange	Local Currency	Total Cost
01 Civil Works		251.03	251.03		225.11	225.11
02 Goods		0.09	0.09		0.007	0.007
03 Consulting Services		0.88	0.88		0.43	0.43
Total (A+B+C)		252.00	252.00		225.54	225.54

Source: Asian Development Bank

Table A2.2: Financing Plan (\$million)

Category	Appraisal				Actual			
	Foreign Exchange	Local Currency	Total Cost	% of cost	Foreign Exchange	Local Currency	Total Cost	% of cost
ADB		252.00	252.00	73.90		225.54	225.54	76.99
Government		89.00	89.00	26.10		67.39	67.39	23.01
Total (A+B+C)		341.00	341.00	100		292.93	292.93	100
% of cost								

Source: Asian Development Bank

DISBURSEMENTS OF ADB LOAN PROCEEDS

Table A3.1: Annual and Cumulative Disbursement of Loan Proceeds

Year	Annual Disbursement			Cumulative Disbursement	
	Appraisal Amount (\$million)	Actual Amount (\$million)	% of Total	Amount (\$million)	% of Total
2013	39.49	29.36	13.02	29.36	13.02
2014	56.68	87.79	38.92	117.15	51.94
2015	155.83	56.37	25.00	173.52	76.94
2016		26.83	11.89	200.35	88.83
2017		16.68	7.40	217.03	96.23
2018		8.51	3.77	225.54	100.00
Total	252.00	225.54	100.00		

Source: Asian Development Bank

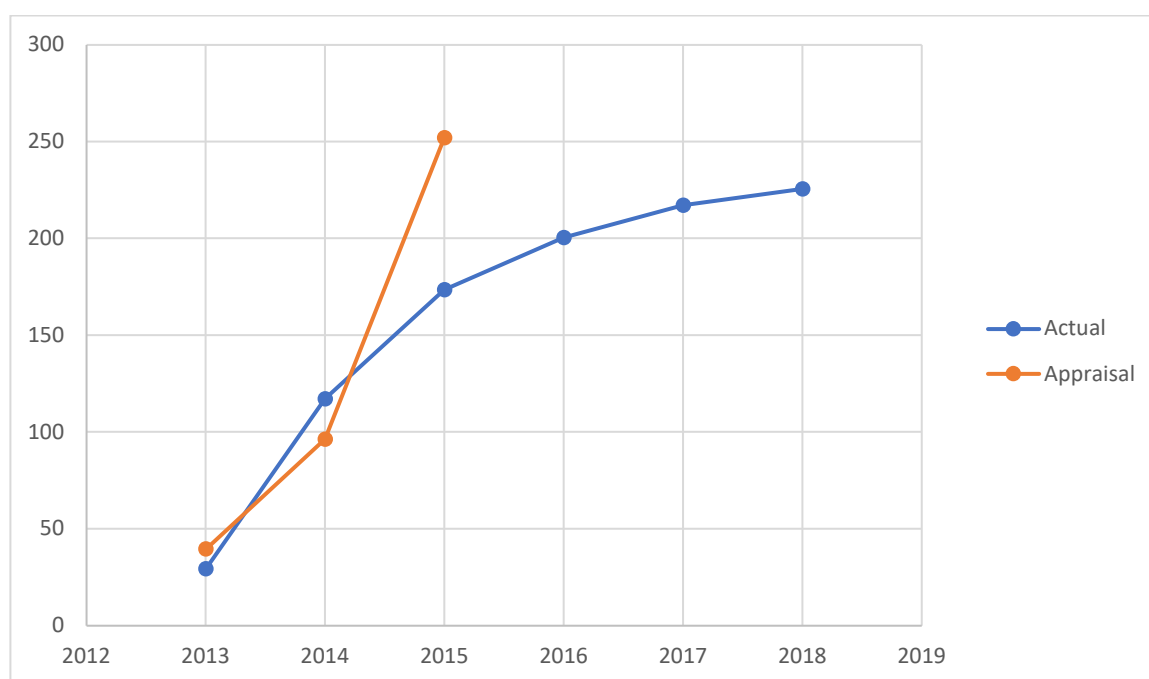
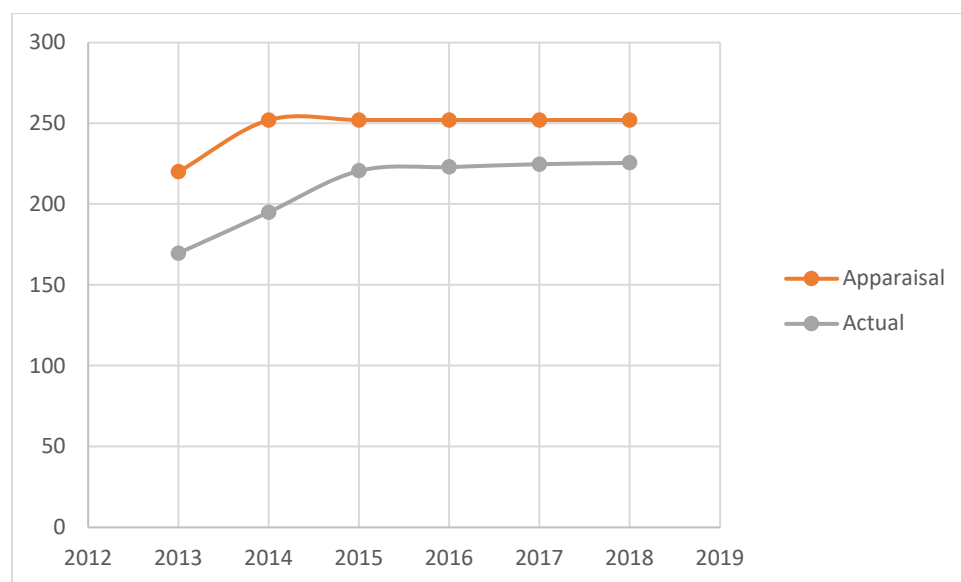


Figure A3.1: Appraisal vs Actual Cumulative Disbursement Loan Proceeds

CONTRACT AWARDS OF ADB LOAN GRANT PROCEEDS

Table A4.1: Annual and Cumulative Contract Awards of ADB Loan Proceeds

Year	Annual Contract Awards			Cumulative Contract Awards	
	Appraisal Amount (\$million)	Actual Amount (\$million)	% of Total	Amount (\$million)	% of Total
2013	220.00	169.61	75.20	169.61	75.20
2014	32.00	25.41	11.26	195.02	86.64
2015	0.00	25.62	11.36	220.64	97.82
2016		2.37	1.06	223.01	98.87
2017		1.63	0.72	224.64	99.60
2018		0.90	0.40	225.54	100.00
Total	252.00	225.54	100.00		

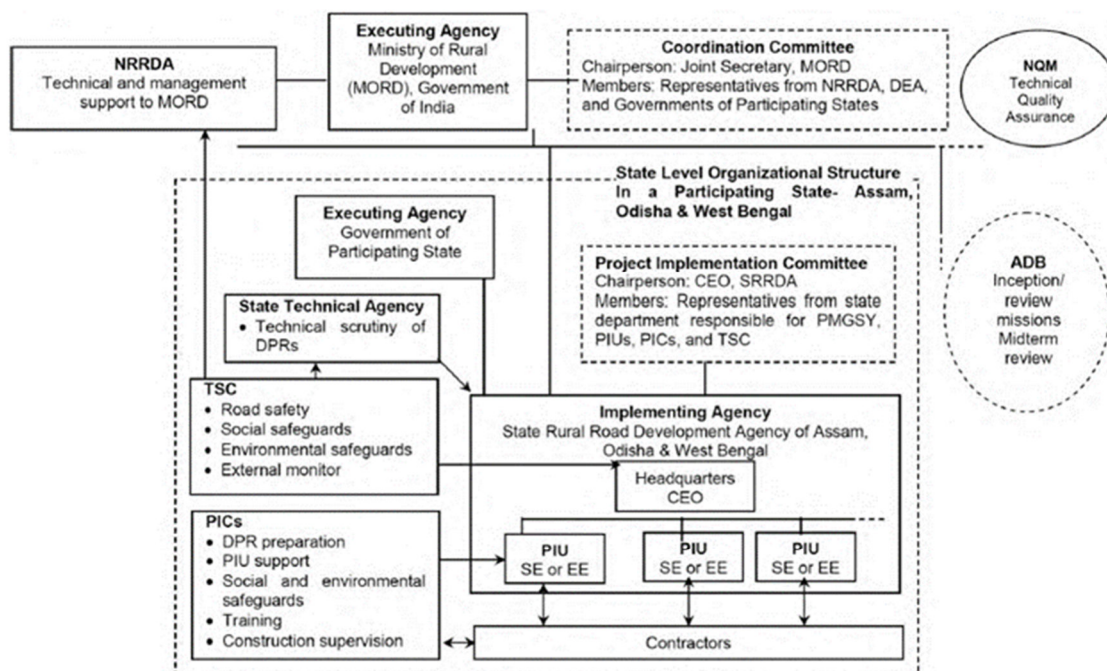


CHRONOLOGY OF MAIN EVENTS

Date	Main Event
2011	
6-11 December	ADB's First fact finding mission in relation to MFF Investment program
2012	
22 January – 6 February	MFF Appraisal
28 April	Periodic Financing Request submitted by Government for \$252 million tranche ¹
16 May	Loan negotiations between Government of India and ADB
22 August	ADB Management approval to proceed with negotiations for first tranche as Loan 2881
22 August	ADB approval of Loan
October	Government started the procurement activities for civil works
2013	
2 April	Signing of Loan agreement and Project Agreement
2 April	ADB approved advance contracting and retroactive financing for Project
22 -23 May	ADB project review mission
5 June	Original Loan Effectiveness
4 September	Initial disbursement of the loan proceeds
2014	
5-14 February	ADB project review mission
11 March	Delegation of project administration to INRM
26 May-16 June	ADB project review mission
2015	
11 March-10 April	ADB mid-term review mission
26 May	Amendment to loan agreement
3 June	ADB approval of first extension of loan closing date by two years
2016	
17 February	Amendment to loan agreement for change of reallocation table
14 March 2 August	ADB project review mission
2017	
24 March	First partial loan cancellation of \$13 million.
15-19 May	ADB project review mission
2018	
10 January	ADB approval of second extension of loan closing date by six months
8 June	Second partial loan cancellation of \$8 million
30 June	Actual loan closing date
16-17 Jul	ADB project review mission

Date	Main Event
19 Dec	Final loan disbursement
7-10 Aug	ADB project review mission
2019	
2 Jan	Actual loan financial closure
30 October 2 November	ADB project completion review mission

ORGANIZATIONAL STRUCTURE FOR PROJECT IMPLEMENTATION



ADB = Asian Development Bank; CEO = chief executive officer; DEA = Department of Economic Affairs, Ministry of Finance; DPR = detailed project report (road design); EE = executive engineer; MORD = Ministry of Rural Development; NQM = national quality monitor; NRRDA = National Rural Roads Development Agency; PIC = project implementation consultant; PIU = project implementation unit; PMGSY = *Pradhan Mantri Gram Sadhak Yojana* (Prime Minister's Rural Roads Program); SE = superintending engineer; SRRDA = State Rural Roads Development Agency; TSC = technical support consultant.
 Source: ADB. 2005. *Report and Recommendation of the President to the Board of Directors for the Proposed Multitranchise Financing Facility to India for the Rural Roads Sector II Investment Program*. Manila.

STATUS OF COMPLIANCE WITH LOAN COVENANTS

Covenant	Reference in Loan Agreement	Status of Compliance
General Covenants		
<p>Section 2.02. The borrower shall pay to ADB interest on the principal amount of the loan withdrawn and outstanding from time to time at a rate for each interest period equal to the sum of:</p> <p>(a) LIBOR.</p> <p>(b) 0.60% as provided by Section 3.02 of the loan regulations, less a credit of 0.20%, as provided by Section 3.03 of the Loan Regulations; and</p> <p>(c) A maturity premium of 0.20%, as provided by Section 3.03 of the Loan Regulations.</p>	Article II, Page 7	Being Complied
<p>Section 2.03. The borrower shall pay a commitment charge of 0.15% per annum. Such charge shall accrue on the full amount of the loan (less amounts withdrawn from time to time), commencing 60 days after the date of this Loan Agreement</p>	Article II, Page 7	Complied with
<p>Section 2.05. The borrower shall repay the principal amount of the loan withdrawn from the loan account in accordance with the provisions of Schedule 2 to this Loan Agreement</p>	Article II, Page 8	Being Complied
<p>Section 3.01. The borrower shall (i) make the proceeds of the loan available to MORD and the States upon terms and conditions mutually acceptable to ADB and the Borrower, and (ii) cause MORD and the States to apply such proceeds the financing of the expenditures on the Project in accordance with the provisions of this loan agreement and the Project Agreements..</p>	Article III, Page 8	Complied with
<p>Section 3.02. The proceeds of the loan shall be allocated and withdrawn in accordance with the provisions of Schedule 3 to this loan agreement, as such schedule may be amended from time to time by agreement between the borrower and ADB.</p>	Article III, Page 8	Complied with
<p>Section 3.03. Except as ADB may otherwise agree, the borrower shall procure, or cause to be procured, the items of expenditure to be financed out of the proceeds of the loan in accordance with the provisions of Schedule 4 to this loan agreement. ADB may refuse to finance a contract where any such item has not been procured under procedures substantially in accordance with those agreed between the borrower and ADB or where the terms and conditions of the contract are not satisfactory to ADB.</p>	Article III, Page 8	Complied with
<p>Section 3.04. Except as ADB may otherwise agree, the borrower shall cause all items of expenditure financed out of the proceeds of the loan to be used exclusively in carrying out the Project.</p>	Article III, Page 9	Complied with
<p>Section 3.05. The Loan Closing Date for the purposes of Section 9.02 of the Loan Regulations shall be 31 December 2015 or such other date as may from time to time be agreed between the Borrower and ADB.</p>	Article III, Page 9	Complied with

Covenant	Reference in Loan Agreement	Status of Compliance
Particular Covenants		
<p>Section 4.01. (a) The borrower shall cause MORD, Assam, Chhattisgarh, Madhya Pradesh, Odisha and West Bengal to carry out the project with due diligence and efficiency and in conformity with sound applicable technical, financial, business, and rural roads development and maintenance practices.</p> <p>(b) In the carrying out of the project and operation of the project facilities, the borrower shall perform, or cause to be performed, all obligations set forth in Schedule 5 to this loan agreement.</p>	Article IV, Page 9	Complied with MORD and the states implemented the project with due diligence, efficiently, and in conformity
<p>Section 4.02. (The borrower shall make available to MORD, Assam, Chhattisgarh, Madhya Pradesh, Odisha and West Bengal, promptly as needed, the funds, facilities, services, and other resources, as required, in addition to the proceeds of the loan, for the carrying out of the project.</p>	Article IV, Page 9	Complied with MORD and the states obtained enough support and funds from government to carry out the project.
<p>Section 4.03. The borrower shall ensure that the activities of its departments and agencies with respect to the carrying out of the project and operation of the project facilities are conducted and coordinated in accordance with sound administrative policies and procedures.</p>	Article IV, Page 9	Complied with: A coordination committee, chaired by the Joint Secretary, MORD and comprised representatives from relevant agencies, was in place to monitor the use of the loan and overall implementation performance of the project. The project was implemented fully under the PMGSY guidelines.
<p>Section 4.04. The borrower shall enable ADB's representatives to inspect the project, the goods and works, and any relevant records and documents.</p>	Article IV, Page 9	Complied with: ADB representatives during periodic review missions had visited to inspect all the project activities relating goods and works and any relevant records and documents
<p>Section 4.05. The borrower shall take all actions which shall be necessary on its part to enable MORD, Assam, Chhattisgarh, Madhya Pradesh, Odisha and West Bengal to perform its obligations under the project agreement, and shall not take or permit any action which would interfere with the performance of such obligations.</p>	Article IV, Page 9	Complied with:
<p>Section 4.06. (a) In relation to the project, the borrower shall exercise its rights under the financing arrangements in such a manner as to protect the interests of the borrower and ADB to accomplish the purposes of the loan.</p> <p>(b) In relation to the project, no rights or obligations under such financing arrangements shall be assigned, amended, abrogated or waived without prior notice to ADB.</p>	Article IV, Page 9	Complied with:

Covenant	Reference in Loan Agreement	Status of Compliance
Loan Effectiveness Section 6.01. (A date 90 days after the date of this loan agreement is specified for the effectiveness of this loan agreement for the purposes of Section 10.04 of the Loan regulations	Article VI, Page 10	Complied with: The loan agreement was signed on 2 April 2013 and loan was declared effective 5 June 2013
Percentage of ADB Financing Except as ADB may otherwise agree, each item of expenditure shall be financed out of the loan on the basis of percentages set forth: (a) Works – 80% of total expenditure (b) Goods – 100% of total expenditure (c) Consulting Services – 100% of total expenditure	Schedule 3 Para 2	Complied with On 1 February 2016 Government requested ADB for a change to the allocation table and with approval of the same by ADB, the loan agreement was amended as follows – (a) Works – 80% of total expenditure claimed (b) Goods – 100% of total expenditure claimed* (c) Consulting Services – 100% of total expenditure claimed* * Exclusive of taxes and duties imposed within territory of the Borrower.
Reallocation Notwithstanding the allocation of Loan proceeds and withdrawal percentages set forth in the Table and subject to paragraph 2 of this Schedule, (a) if the amount of the Loan allocated to any component appears to be insufficient to finance all agreed expenditures in that component, ADB may, by notice to and in consultation with the borrower, (i) reallocate to such component, to the extent required to meet the estimated shortfall, amounts of the Loan which have been allocated to another component but, in the opinion of ADB, are not needed to meet other expenditures (ii) if such reallocation cannot fully meet the estimated shortfall, reduce the withdrawal percentage applicable to such expenditures in order that further withdrawals under such component may continue until all expenditures thereunder shall have been made; and (b) if the amount of the Loan then allocated to any component appears to exceed all agreed expenditures in that component, ADB may, by notice to the Recipient, reallocate such excess amount to any other Component.	Schedule 3 Para 3	Complied with
Disbursement procedures Except as ADB may otherwise agree, the loan proceeds shall be disbursed in accordance with the loan disbursement handbook.	Schedule 3 Para 4	Complied with
Statement of Expenditures The statement of expenditures (SOE) procedure may be used for reimbursement of eligible expenditures, in accordance	Schedule 3 Para 5	Complied with

Covenant	Reference in Loan Agreement	Status of Compliance
with ADB's Loan Disbursement Handbook and detailed arrangements agreed upon between the Borrower and ADB. Any individual payment to be reimbursed or liquidated under the statement of expenditures procedures shall not exceed the equivalent of \$100,000.		
Retroactive Financing Withdrawals from the Loan Account may be made for reimbursement of eligible expenditures incurred under the Project before the Effective Date, but not earlier than 12 months before the date of this Loan Agreement in connection with Works and Consulting Services, subject to a maximum amount equivalent to 20% of the Loan amount.	Schedule 3 Para 6	Complied with: A total of \$5.16 million eligible expenses incurred under the Project before the effective date but not earlier than 12 months before the date of loan agreement were reimbursed to Government under the loan.
Procurement for Goods and Works Except as ADB may otherwise agree, goods and works shall only be procured on the basis of the methods of procurement set forth below: (a) National competitive bidding (b) Shopping The methods of procurement are subject to, among other things, the detailed arrangements and threshold values set forth in the procurement plan. The borrower may only modify the methods of procurement or threshold values with the prior agreement of ADB, and modifications must be set out in updates to the procurement plan.	Schedule 4 Para 3 and Para 4	Complied with: A total of 643 contracts, procurement was on basis of National Competitive Bidding procedures
National Competitive Bidding The borrower, through MORD and the relevant state, and ADB shall ensure that any procurement activity under national competitive bidding is consistent with the Procurement Guidelines. The PMGSY standard bidding document, and procurement procedures, each of such standard bidding document, and procurement procedures as amended by agreement by ADB, and used for national competitive bidding under RRSIP Loans 2248, 2414, 2445, 2535, 2651, as further described in the FAM, shall apply to the subprojects financed with the proceeds of the loan. Any modifications or clarifications to such procedures agreed between the borrower and ADB shall be set out in the procurement plan. Any subsequent change to the agreed modifications and clarifications shall become effective only after concurrence of such change by the borrower and ADB	Schedule 4 Para 5	Complied with: The procurement of civil works followed the PMGSY standard bidding documents and procedures with the agreed adjustment for items under ADB-financing ineligibility, anticorruption, and social and environmental safeguards under the project.
Procurement Reviews The borrower, through MORD, shall cause the states to allow ADB to carry out procurement audits during project implementation as part of its regular review process.	Schedule 4 Para 6	Complied with: ADB conducted the post facto procurement review as per procurement plan.

Covenant	Reference in Loan Agreement	Status of Compliance
<p>Conditions for Award of Contract</p> <p>The borrower and the states shall ensure that no works contract is awarded until the project executing agency has incorporated the relevant provisions from the relevant EMP into the works contract.</p> <p>The borrower and the states shall ensure that no works contract is awarded for a subproject until the project executing agencies have prepared a CPF for the subproject.</p> <p>The borrower and the states shall ensure that no works contracts are awarded until the requirements described in paragraphs 26 (subparagraph (a)), 31, 32 (subparagraphs (a) through (c), and 39 of Schedule 5 to this loan agreement have been complied with by the project executing agencies.</p>	<p>Schedule 4, Para 7, para 8 and Para 9</p>	<p>Complied with:</p> <p>All works contracts were awarded after all related requirements in the loan agreements were complied with. PIC's appointed by respective the States carried out the necessary due diligence for ensuring the environmental, social safeguards compliance prior to award of the civil works contracts.</p>
<p>Consulting Services</p> <p>Except as ADB may otherwise agree, the borrower through MORD and the relevant state shall apply quality- and cost-based selection for selecting and engaging consulting services, in accordance with, among other things, the procedures set forth in the procurement plan.</p> <p>The borrower's standard procedures for selecting and engaging domestic consultants are subject to the following modifications:</p> <p>(a) The selection and engagement of international and national consultants undertaking activities financed out of the proceeds of the loan shall be subject to the approval of ADB with regard to their competence and experience for carrying out the assignment and shall be in accordance with the detailed procedures set out in the FAM.</p> <p>(b) The selection and engagement of national consultants undertaking activities financed from the borrower's own resources (hereinafter referred to as the PICs as described more fully in paragraph 4 of Schedule 5 to this loan agreement and the FAM) shall be in accordance with the PMGSY procedures found acceptable to ADB.</p>	<p>Schedule 4, Para 10</p>	<p>Complied with.</p> <p>The recruitment of the TSC and PIC consulting services was in conformance with ADB's Guidelines on the Use of Consultants (2007, as amended from time to time). Quality- and cost-based selection was used</p>
<p>Industrial or Intellectual Property Rights</p> <p>(a) The borrower, MORD, and the relevant state shall ensure that all goods and works procured (including without limitation all computer hardware, software and systems, whether separately procured or incorporated within other goods and services procured) do not violate or infringe any industrial property or intellectual property right or claim for any third party.</p> <p>(b) The borrower, MORD and the relevant state shall ensure that all contracts for the procurement of goods and works contain appropriate representations, warranties and, if appropriate, indemnities from the contractor or supplier with respect to the matters referred to in subparagraph (a) of this paragraph.</p> <p>The borrower, MORD, and the relevant state shall ensure that all ADB-financed contracts with consultants contain appropriate representations, warranties and, if appropriate,</p>	<p>Schedule 4, Para 12 (a), (b) and Para 13</p>	<p>Complied with.</p> <p>Executing agency took necessary steps to include appropriate language in all the Goods, Works and Services Contracts. All contracts for procurement of goods, works and services had representations, warranties, and indemnities with respect to industrial or intellectual property rights.</p>

Covenant	Reference in Loan Agreement	Status of Compliance
indemnities from the consultants to ensure that the consulting services provided do not violate or infringe any industrial property or intellectual property right or claim of any third party.		
<p>Execution and Implementation Arrangements</p> <p>The borrower and the project executing agencies shall ensure that the project is implemented in accordance with the detailed arrangements set forth in the FAM. Any subsequent change to the FAM shall become effective only after approval of such change by the borrower and ADB. In the event of any discrepancy between the FAM and this loan agreement, the provisions of this loan agreement shall prevail. The borrower shall ensure that the project executing agencies undertake all activities as included in this loan agreement.</p> <p>The project executing agencies shall ensure that the IAs employ sufficient staff for the duration of the project with adequate and relevant expertise in the field of project management, financial management, engineering, construction supervision, procurement, construction, road maintenance and safety, and environmental and social safeguards implementation. The project executing agencies shall keep the IAs equipped with the necessary office space, facilities, equipment, support staff and management information systems, and cover the costs of the social impact mitigation, utility relocation, and road maintenance through annual budget allocations. The project executing agencies shall normally (i) maintain assignment of the same persons to key positions in the IAs for at least three consecutive years, (ii) not leave key positions vacant for more than 30 days, and (iii) not transfer more than one key staff within a 6-month period.</p> <p>Each state shall assist the related IA in obtaining approvals and clearances for timely project execution under the PMGSY guidelines and other applicable laws and regulations of the borrower and that relevant state.</p>	Schedule 5, Para 1, Para 2 and Para 3	<p>Complied with.</p> <p>The project was fully implemented in accordance with PMGSY guidelines.</p> <p>As arranged during project preparation, the executing agencies for the project were MORD at the central level and state governments at the state level. MORD was responsible for overall supervision and execution of the project</p>
<p>Counterpart Support</p> <p>Each state shall provide, as necessary, respective counterpart staff, land, facilities, and counterpart funding required for timely and effective implementation of the project including, without limitation, any funds required, (a) to meet any shortfall between cost and revenues for the operation and maintenance of the facilities created or rehabilitated under the project, (b) to mitigate unforeseen environmental and social impacts, (c) to meet additional costs arising from utility relocation, design changes, price escalation in construction costs and/or unforeseen circumstances, and (d) for maintenance of the road facilities to be constructed and/or upgraded under the project. The borrower and/or state shall make the resources thus required available on an annual basis for each fiscal year.</p>	Schedule 5, Para 4	<p>Complied with.</p> <p>Each project state provided respective counterpart staff, land facilities, and counterpart funds for the project implementation and monitoring in accordance with the financing plan in a timely manner through approved annual budget allocations.</p>
Each state shall ensure that the PICs continue to assist with the implementation of the provisions of the CPF and the EARF, IEE and EMPs for all subprojects under the facility	Schedule 5, Para 5	Complied with.

Covenant	Reference in Loan Agreement	Status of Compliance
<p>along with road safety and road maintenance tasks, and that the PICs shall include, as a minimum, specialists in road maintenance, road safety, social safeguards, gender and environmental safeguards.</p>		<p>Each state ensured that the PICs contracts were extended to assist with implementation of the provisions of CPF, EARF, IEE and EMP for all subprojects along with road safety and maintenance tasks into the maintenance period of the civil works contracts.</p>
<p>Selection criteria and Approval process for subprojects The borrower through the states and the project executing agencies shall ensure that all subprojects are selected and approved in accordance with the selection criteria and approval process stipulated in Schedule 4 to the FFA.</p> <p>The states and the project executing agencies shall ensure that all documents forming the basis for screening, selection and processing of subprojects are made available to ADB upon request and are kept available for such purposes for a minimum period of five years from the date of the project completion report for the project.</p> <p>The states and the project executing agencies shall analyze the recommendations made by the consultants engaged under the project, and/or associated technical assistance(s) for the project and inform ADB on the extent and manner of their implementation.</p>	<p>Schedule 5, Para 6, Para 7 and Para 8</p>	<p>Complied with:</p> <p>The Schedule 4 of FFA provided 11 selection criteria. Implementing agency followed the process in screening, selection and processing of subprojects</p> <p>Being Complied with:</p> <p>Executing agency and implementing agencies are keeping the records and documents that were basis for screening, selection and processing of subprojects for ADB.</p> <p>ADB did not request for the documents</p>
<p>Coordination Committees The borrower shall ensure that Coordination Committees at MORD and state levels are established, not later than 3 months of effective date, as set forth in Schedule 6 to the FFA.</p>	<p>Schedule 5, Para 9</p>	<p>Complied with.</p> <p>The coordination committee at the central level comprising leaders from relevant agencies met semi-annually and continued to monitor the use of the loan and overall implementation performance. At the state level, similar committees were established under the PMGSY guidelines for overseeing and monitoring timely implementation of the project.</p>

Covenant	Reference in Loan Agreement	Status of Compliance
<p>Project Implementation Units</p> <p>Each state shall ensure that the PIUs and the RRNMUs shall implement the subprojects and carry out necessary coordination with the concerned departments in the state and panchayats to ensure the smooth implementation of the subprojects.</p>	<p>Schedule 5, Para 10</p>	<p>Complied with.</p> <p>In the project states, the project implementation agencies were the SRRDAs. PIUs were established in accordance with the PMGSY guidelines, headed by chief executive officers responsible for overall coordination of project implementation in each district.</p> <p>During implementation, 35 PIUs were established in Assam, 16 in Chhattisgarh, 38 in Madhya Pradesh, 17 in Odisha and 4 in West Bengal.</p>
<p>Road Maintenance and RRNMUs</p> <p>In accordance with the PMGSY guidelines, each state shall provide adequate and timely funding for proper maintenance of the PMGSY roads. Any increases in the actual amounts to be provided shall be met by the respective state through its respective additional budget allocations, or other alternative sources of financing.</p>	<p>Schedule 5, Para 11</p>	<p>Complied with.</p> <p>Funding of the PMGSY roads after the 5-year post-construction period is covered by the government's non-plan resources on a grants-in-aid basis.</p>
<p>Except as ADB may otherwise agree, each state shall require the respective IA (through the PIUs and RRNMUs) to ensure proper maintenance of the PMGSY roads until these roads are transferred to the designated zilla panchayats in accordance with the PMGSY guidelines. Each state shall also allocate the requisite funds to the relevant functionaries at either zilla panchayat or the PIUs and RRNMUs for such maintenance in accordance with the requirements of the PMGSY guidelines.</p> <p>Each state shall ensure that either zilla panchayat or the PIU or RRNMU, as the case may be, shall ensure further maintenance of roads after completion of the initial 5-year maintenance period under the related contracts.</p>	<p>Schedule 5, Para 12 and Para 13</p>	<p>Complied with.</p> <p>Following ADB's Project design and formulation, MORD, in its two circulars of 9 September 2010 and 12 November 2010, introduced an in-built mechanism to ensure that states provide timely and adequate funding for maintenance of the PMGSY roads within the 5-year post-construction period.</p> <p>In the Project, the civil works contracts had a provision incorporated to ensure contractors carryout 5-year maintenance of the project road sections after construction.</p>

Covenant	Reference in Loan Agreement	Status of Compliance
<p>Each state shall establish one pilot RRNMU during the first year, and approximately five additional RRNMUs by no later than the end of the third year of implementation of the Investment Program (30 RRNMUs in total). The RRNMUs shall be created based on the existing PIUs for rural roads and shall have staffing, equipment, and facilities adequate to provide effective management of the rural road network. The states shall ensure full RRNMU staffing and budget adequate for the full implementation of RRNMU tasks. The states shall prepare the design of RRNMU facilities and shall normally (i) not transfer key staff from the RRNMU for at least 3 consecutive years, (ii) not leave key positions vacant for more than 30 days, and (iii) not transfer more than one key staff within a 6-month period.</p>	<p>Schedule 5, Para 14</p>	<p>Complied with.</p> <p>Each participating state has established one pilot RRNMU under the Project. Rest of the covenant is in compliance in tranche 2 and 3</p> <p>The Pilot RRNMUs were provided with staff, equipment and facilities adequate to provide effective management of rural road network. The pilot RRNMUs were provided with staff on deputation.</p>
<p>Each state shall review the experience and lessons learned regarding the operation of RRNMUs and make a decision on converting the remaining PIUs into RRNMUs.</p>	<p>Schedule 5, Para 15</p>	<p>Being Complied with</p>
<p>Road Safety</p> <p>Each state shall incorporate on a representative sample basis road safety audits accompanied by road safety awareness sessions in the subproject design process, during construction, and on existing roads and shall ensure that recommendations of the road safety audits are reviewed and promptly incorporated in the design and implemented on existing roads, as appropriate.</p> <p>Each state shall ensure that concerned staff of the PIU or RRNMU, as the case may be, participates in road safety audits and develops capacities to conduct the process in-house or to manage the process effectively.</p>	<p>Schedule 5, Para 16 and Para 17</p>	<p>Complied with.</p> <p>The midterm review for the project was waived. The PMC consultants under Rural Roads Sector I Project developed a road safety guide and road safety campaign materials. The TSC was entrusted with reviewing the road safety program in the project states and checklists were prepared for the PIC to ensure safety measures were incorporated in the design and implementation of the project roads</p>
<p>Subproject Design</p> <p>MORD shall cause the states to ensure that the subprojects design is conducted in accordance with the process as specified in Schedule 3 of the FFA.</p>	<p>Schedule 5, Para 18</p>	<p>Complied with.</p> <p>A total of 1,080 subprojects were selected and prepared based on the subproject selection criteria and procedure under PMGSY guidelines and approved by ADB.</p>
<p>Rural Connectivity Training and Research</p> <p>Each state shall establish one RCTRC during the second year of implementation of investment program to (i) conduct systematic training of engineers involved in the management of the rural road network, technicians, site supervisors,</p>	<p>Schedule 5, Para 19</p>	<p>Complied with.</p> <p>Five RCTRCs were established in the state of Assam, Chhattisgarh,</p>

Covenant	Reference in Loan Agreement	Status of Compliance
<p>concerned staff of panchayat raj institutions, design consultants and contractors, and (ii) support a sustainable practice-oriented research on rural roads. The RCTRCs shall have staffing, equipment, and facilities adequate to provide high-quality and large-scale training, both in house and with the use of external resource persons. Each state shall ensure full RCTRC staffing and budget adequate for the full implementation of RCTRC tasks. The states shall prepare the design of RCTRC facilities and shall normally (i) not transfer key staff from RCTRCs for at least 3 consecutive years, (ii) not leave key positions vacant for more than 40 days, and (iii) not transfer more than one key staff within a 6-month period.</p>		<p>Madhya Pradesh, Odisha and West Bengal.</p> <p>All 5 RCTRCs are established and fully operational. 3,703 staff received training certificates time to time</p>
<p>Environment</p> <p>The borrower and the states shall ensure or cause the relevant project executing agency and IA to ensure, in respect of the relevant state, that the preparation, design, construction, implementation, operation and decommissioning of each subproject comply with applicable laws and regulations of the borrower and of the relevant state relating to environment, health and safety, the environmental safeguards, the EARF and ECOP, and all measures and requirements set forth in the relevant IEE and EMP, and any corrective or preventative actions set forth in a safeguards monitoring report.</p> <p>Only those projects that meet the eligibility requirements set out in subproject selection criteria and procedures included in Schedule 4 of the FFA, and which adhere to relevant requirements of the PMGSY guidelines, Safeguard Policy Statement, the EARF and ECOP and related IEE, and other applicable guidelines for subproject implementation, shall be eligible for financing from the loan proceeds. Each state shall monitor the implementation of subprojects through to the completion of each subproject and report to NRRDA and ADB on the results of such monitoring.</p> <p>Each state shall require the respective IA to ensure that preparation, design, construction, implementation, operation and decommissioning of each subproject comply with (a) applicable laws and regulations of the borrower and of the relevant state relating to environment, health, and safety; (b) the environmental safeguards; (c) the EARF and ECOP; and (d) all measures and requirements set forth in the work relevant IEE and EMP, and any corrective or preventative actions set forth in a safeguards monitoring report. No construction work shall be undertaken on sections of subprojects that pass through a forest reserve unless clearance from appropriate authorities is obtained under applicable laws and regulations of the borrower and each state, and no subproject shall be located within an environmentally sensitive areas such as a wildlife sanctuary, national park, or other areas with significant ecological functions that are declared as national parks, sanctuaries, or national/international cultural heritage. In accordance with the EARF and ECOP each state shall require the IA to prepare</p>	<p>Schedule 5, Para 20,</p> <p>Schedule 5, Para 21</p> <p>Schedule 5, Para 22</p>	<p>Complied with.</p> <p>As stipulated, only those works which met the subproject selection criteria and procedures were selected and financed by the loan proceeds. The government and PIUs monitored the project progress closely, and quarterly progress reports were submitted to ADB in a timely manner.</p> <p>The subprojects were implemented in accordance with the EARF and related IEE. The project states incorporated standard EMPs in their bidding documents for civil works. The contractors responded to the EARF and ECOP requirements and included the costs in their bills of quantities. Documentation of environmental issues and monitoring reports was properly maintained.</p> <p>The governments and PIUs, with assistance from the TSC, carefully implemented the environmental mitigation measures during project implementation; and the PICs carried out regular environmental monitoring. The ADB project review</p>

Covenant	Reference in Loan Agreement	Status of Compliance
ECOP checklists for each road and bridges longer than 50 meters, based on which subproject specific EMPs and the IEEs shall be prepared.		missions noted that implementation of the environmental safeguards in all project states was generally in order.
<p>Land availability and community participation framework</p> <p>The borrower and the states shall ensure or cause the relevant project executing agency to ensure, in respect of the relevant state, that the respective IA implements the provisions of the CPF for all subprojects as agreed upon with ADB and in conformity with all relevant applicable laws and regulations of the borrower and each state.</p> <p>The borrower and the states shall ensure or cause the relevant project executing agency to ensure, in respect of the relevant state, that the respective IA shall, subject to compliance with the relevant provisions of the CPF, EARF/ECOP and related IEE, EMP, and any corrective or preventative actions set forth in a safeguards monitoring report, and in accordance with all relevant applicable laws and regulations of the borrower and each state, acquire or make available the land and rights to land free from any encumbrances, clear the utilities, trees and any other obstruction from such land, required for commencement of construction activities in accordance with the schedule agreed under the related works contract.</p> <p>The borrower shall cause each state to ensure that subsequent to award of works contract under any subproject, no section or part thereof under the works contract shall be handed over to the contractor unless the applicable provisions of the CPF have been complied with.</p> <p>The borrower shall cause each state to ensure that (a) the respective IA shall (i) carry out the community consultation process for all subprojects in accordance with the PMGSY guidelines as supplemented by the CPF, EARF and ECOP, (ii) disseminate the information on process of land transfer/availability as the case may be, support/assistance provisions and grievance provisions procedures to the project-affected communities in a timely manner so that all related issues are resolved before awarding works contracts, and (iii) ensure that in case of voluntary land donations/transfer, these are undertaken in a transparent manner, under proper documentation, and avoid any kind of coercion or forced donations/transfer; and in this regard shall not exercise any eminent domain or related mechanisms that may be deemed to be compulsory acquisition of land; and (b) the details of land made available in accordance with the procedures prescribed in the PMGSY guidelines, are reflected in the local land records in a timely manner, to avoid disputes</p>	Schedule 5, Para 23, Para 24, Para 25 and Para 26	<p>Complied with.</p> <p>The CPF was agreed upon between the government and ADB to provide guidance and mitigation measures for voluntary land donation, and to ensure proper community participation during implementation. During project implementation, the provision of the CPF was implemented accordingly.</p>

Covenant	Reference in Loan Agreement	Status of Compliance
<p>Social Impacts and Community Participation Framework The Borrower and each state shall ensure acceptance of the project through effective community participation in selecting and implementing subprojects in accordance with the PMGSY guidelines as supplemented by the CPF, EAPF, and ECOP.</p> <p>In case of any significant or related impacts on scheduled tribes under any subproject, the mitigation shall follow the requirements as set out in the CPF as agreed by ADB. As also laid down in the CPF, for any impact on land involving traditional and tenure rights of the scheduled tribes, the legal provisions laid down by the borrower and the related state pertaining to land transfer shall be followed.</p>	<p>Schedule 5, Para 27 and Para 28</p>	<p>Complied with. Documentation for each subproject was prepared according to the CPF, EAF and ECOP. The TSC reviewed the documents for necessary compliance. The procedures in the CPF were followed to ensure participatory project preparation and that the process for land donation or transfer was undertaken in a transparent manner. During implementation, the PIUs carried out the community consultation process for all subprojects in accordance with the PMGSY guidelines as supplemented by the CPF, including dis-seminating information on the process of land transfer or land availability, support provisions, and grievance procedures to the project-affected communities in a timely manner. The implementing agencies ensured that voluntary land donation or transfer was undertaken in a transparent manner, supported by proper documentation, and avoided any kind of coercion</p>
<p>Labor Standards The borrower and the states shall ensure, or cause the project executing agencies to ensure, that works contracts follow all applicable labor laws of the borrower and the relevant state, if any, and that these further include provisions to the effect that contractors (i) carry out HIV/AIDS awareness programs for labor and disseminate information at worksites on risks of sexually transmitted diseases and HIV/AIDS as part of the health and safety measures for those employed during construction; (ii) follow and implement all statutory provisions on labor (including not employing or using children as labor, equal pay for equal work), health, safety, welfare, sanitation, and working conditions; and (iii) maximize employment of females and local poor and disadvantaged persons for construction and routine maintenance purposes,</p>	<p>Schedule 5, Para 29 and Para 30</p>	<p>Complied with. The bid documents and the civil works contracts financed under the project included provisions to disseminate information at work sites on the risk of sexually transmitted infections and HIV/AIDS as part of the health and safety measures for those employed during construction; and followed legally mandated provisions on health,</p>

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<p>provided that the requirements for efficiency are adequately met.</p> <p>The states shall ensure that the PIUs and RRNMUs will coordinate with state AIDS Control Society and other public health agencies to carry out HIV/AIDS awareness programs for labor and dissemination of information at worksites on risks of sexually transmitted diseases and HIV/AIDS as part of health and safety measures for those employed during construction.</p>		<p>welfare, sanitation, and appropriate working conditions for construction workers at camp sites.</p>
<p>Human and Financial Resources to Implement Safeguards requirements</p> <p>The borrower and the states shall make available, or cause the relevant project executing agency to make available, in respect of the relevant state, necessary budgetary and human resources to prepare in accordance with CPF and EARF and fully implement the CPFs and EMPs.</p>	<p>Schedule 5, Para 31</p>	<p>Complied with.</p> <p>The subprojects were implemented in accordance with the EARF and related IEE. The project states incorporated standard EMPs in their bidding documents for civil works.</p>
<p>Bidding documents and Execution of Civil Works Contracts</p> <p>The borrower and the states shall ensure, or cause the relevant project executing agency to ensure, that in respect of the relevant state, all bidding documents and contracts for works contain provisions that require contractors to:</p> <p>(a) Comply with the measures and requirements relevant to the contractor set forth in the IEEs, ECOPs, EMPs and CPF (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set out in a safeguards monitoring report;</p> <p>(b) Make available a budget for all such environmental and social measures.</p> <p>(c) Provide the project executing agency with a written notice of any unanticipated environmental, social impacts that arise during construction, implementation or operation of the project that were not considered in the IEEs, ECOPs, EMPs and CPFs.</p> <p>(d) Adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and</p> <p>(e) Fully reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.</p> <p>Subject to compliance with the requirements of the CPF, EARF, ECOP and related IEE, each state shall (i) include a standard EMP into the bidding documents; and (ii) prepare and provide with the detailed project report a subproject specific EMP, to enable the contractor to estimate and include the cost required for implementing the EMP in its bid.</p> <p>Each state shall ensure that any changes to the land alignment or any environmental or social impacts arising following or during the preparation of detailed designs of related subproject roads or during implementation shall be</p>	<p>Schedule 5, Para 32, Para 33 and Para 34</p>	<p>Complied with.</p> <p>The bid documents used for execution of all civil works were approved by ADB and followed the guidelines and principles set by PMGSY.</p> <p>The bid documents and the civil works contracts financed under the project were supervised by the PIUs staff assisted with the PIC to ensure compliance on environmental, social safeguards and road safety aspects.</p>

Covenant	Reference in Loan Agreement	Status of Compliance
subject to prior approval by ADB or related project executing agency, as the case may be, in accordance with the subproject selection criteria and procedures included in Schedule 4 to the FFA.		
<p>Safeguards monitoring and reporting</p> <p>The borrower and the states shall do the following, or shall cause the relevant project executing agency, in respect of the relevant state, to do the following:</p> <p>(a) Submit annual social safeguards monitoring reports to NRRDA. MORD through NRRDA shall provide ADB with the annual safeguard monitoring reports to be disclosed on the ADB website in accordance with ADB's Public Communications Policy (2011) and disclose relevant information from such reports to affected persons promptly upon submission.</p> <p>(b) Submit to NRRDA annual safeguards monitoring reports for environmental category B project and semi-annual safeguards monitoring reports for environmental category A project. MORD through NRRDA shall provide ADB with the safeguards monitoring reports to be disclosed on the ADB website in accordance with ADB's Public Communications Policy (2011).</p> <p>(c) If any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the project that were not considered in the IEEs, ECOPs, EMPs and CPFs, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; and</p> <p>(d) Report any breach of compliance with the measures and requirements set forth in the EMPs and CPFs promptly after becoming aware of the breach.</p>	Schedule 5, Para 35 (a) through (d),	Complied with.
<p>Prohibited List of Investments</p> <p>The borrower and the states shall ensure or cause the project executing agencies to ensure that no proceeds of the loans are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of the SPS.</p>	Schedule 5, Para 36	Complied with.
<p>Gender</p> <p>The borrower and the states shall ensure that the project executing agencies adopt and implement the GAP in a timely manner over the entire investment program period, and that adequate resources are allocated for this purpose. In particular, the borrower and the states shall ensure that (i) at least 10% of project beneficiaries are female headed households, and 40% of project beneficiaries are from vulnerable groups (poor, scheduled tribes, scheduled castes, women and physically handicapped); (ii) at least 33% of the routine road maintenance works are done by women; (iii) and that the remaining targets stated in the GAP are achieved. The project executing agencies shall conduct training on GAP implementation for all staff involved in implementation of the</p>	Schedule 5, Para 37	Complied with.

Covenant	Reference in Loan Agreement	Status of Compliance
project. Implementation of the GAP will be closely monitored, and the progress will be reported to ADB.		
Development Coordination The borrower, MORD and each state shall keep ADB informed of discussions with other multilateral, bilateral, and national aid agencies that may have implications for the implementation of the project. The borrower and each state shall provide ADB with an opportunity to comment on any resulting policy reform and/or investment proposals and shall take into account ADB's views before finalizing and implementing any such proposals.	Schedule 5, Para 38	Complied with.
Governance and Anticorruption The borrower, MORD, the states and project executing agencies shall ensure that anticorruption provisions acceptable to ADB are included in all bidding documents and contracts, including provisions specifying the right of ADB to review and examine the records and accounts of the executing and implementing agencies and all contractors, suppliers, consultants, and other service providers as they relate to the project. The borrower, MORD, the states and the project executing agencies shall comply with ADB's Anticorruption Policy (1998, as amended to date), and shall allow and assist ADB's representatives to carry out random spot checks on the work in progress and utilization of funds for the project and subprojects. Each state shall ensure that under the PMGSY website, the project related information about project activities and procurement are disclosed as set out in details in the FAM. The states shall cause the project executing agencies through the independent quality monitors under PMGSY to conduct periodic inspections and random spot checks of contractors' project related activities, bills and supporting documents.	Schedule 5, Para 39, Para 40, Para 41 and Para 42	Complied with.
Monitoring and Reporting MORD, through NRRDA, shall have established within 3 months following the date of the FFA, a systematic overall project performance management system, in form and substance acceptable to ADB, to be used throughout the life of the project (PPMS). NRRDA, with the support of the TSC, shall establish, within 3 months following the effective date, a baseline for performance indicators to be used for monitoring implementation of the project. It shall conduct annual evaluation surveys for each project, in accordance with the PPMS, to evaluate the scope, implementation arrangements, progress, and achievement of the outcomes and outputs. Further details of performance monitoring and evaluation are described in the FAM.	Schedule 5 Para 43	Complied with
Each state through the respective IA, assisted by TSC, PICs and other consultants as required, shall establish and assist with the implementation of a PPMS in respect of that state (state PPMS). Each state through the respective IA shall undertake periodic subproject performance review under the	Schedule 5 Para 44	Complied with

Covenant	Reference in Loan Agreement	Status of Compliance
project, in accordance with the state PPMS, to evaluate the scope, implementation arrangements, progress and achievements of objectives of the project.		
Without limiting the generality of Section 2.08 of the project agreements, each state through the respective IA shall submit to MORD the monthly progress reports on the implementation of the subprojects under the project. Based on these reports, MORD through NRRDA shall prepare and provide ADB with quarterly progress reports on the implementation of the subprojects under the project within 45 days of the close of each quarter.	Schedule 5 Para 45	Complied with
Without limiting the generality of Section 2.08 © of the project agreements and Section 7.04 of the loan regulations, MORD/NRRDA through the borrower shall submit to ADB a project completion report within 3 months of physical completion of the project. The report shall include a detailed evaluation of the project, covering the design, costs, contractors' performance, social and economic impact, economic rate of return, implementation of social and environmental safeguard measures and other details relating project, as may be requested by ADB.	Schedule 5 Para 46	Complied with
ADB, the borrower, MORD, and each state shall meet regularly as required to discuss project progress and any changes to implementation arrangements or remedial measures required to be undertaken towards achieving overall project objectives	Schedule 5 Para 47	Complied with
Undertakings The borrower shall ensure compliance with the undertaking set forth in Schedule 6 of the FFA	Schedule 5 Para 48	Complied with
Particular Covenants in Project Agreement		
MORD and the State shall carry out the Project with due diligence and efficiency, and in conformity with sound applicable technical, financial, business, and rural road development and maintenance practices.	PA Section 2.01 (a)	Complied with (All states)
In the carrying out of the Project and operation of the Project facilities, MORD and the State shall perform all obligations set forth in the Loan Agreement to the extent that they are applicable to MORD and the State.	PA Section 2.01 (b)	Complied with (All states)
MORD and the State shall make available, promptly as needed, the funds, facilities, services, equipment, land and other resources as required, in addition to the proceeds of the Loan, for the carrying out of the Project.	PA Section 2.02	Complied with (All states)
In the carrying out of the Project, MORD and the State shall employ competent and qualified consultants and contractors, acceptable to ADB, to an extent and upon terms and conditions satisfactory to ADB.	PA Section 2.03 (a)	Complied with (All states)
Except as ADB may otherwise agree, MORD and the State shall procure all items of expenditures to be financed out of the proceeds of the Loan in accordance with the provisions of Schedule 4 and Schedule 5 to the Loan Agreement. ADB may refuse to finance a contract where any such item has not	PA Section 2.03 (b)	Complied with (All states)

Covenant	Reference in Loan Agreement	Status of Compliance
been procured under procedures substantially in accordance with those agreed between the Borrower and ADB or where the terms and conditions of the contract are not satisfactory to ADB.		
MORD and the State shall carry out the Project in accordance with plans, design standards, specifications, work schedules and construction methods acceptable to ADB. MORD and the State shall furnish, or cause to be furnished, to ADB, promptly after their preparation, such plans, design standards, specifications and work schedules, and any material modifications subsequently made therein, in such detail as ADB shall reasonably request.	PA Section 2.04	Complied with (All states)
MORD and the State shall take out and maintain with responsible insurers, or make other arrangements satisfactory to ADB for, insurance of Project facilities to such extent and against such risks and in such amounts as shall be consistent with sound practice.	PA Section 2.05 (a)	Complied with (All states)
Without limiting the generality of the foregoing, MORD and the State undertake to insure, or cause to be insured, the Goods to be imported for the Project against hazards incident to the acquisition, transportation and delivery thereof to the place of use or installation, and for such insurance any indemnity shall be payable in a currency freely usable to replace or repair such Goods.	PA Section 2.05 (b)	Complied with (All states)
MORD and the State shall maintain, or cause to be maintained, records and accounts adequate to identify the items of expenditure financed out of the proceeds of the Loan, to disclose the use thereof in the Project, to record the progress of the Project (including the cost thereof) and to reflect, in accordance with consistently maintained sound accounting principles, its operations and financial condition.	PA Section 2.06	Complied with (All states)
ADB, MORD and the State shall cooperate fully to ensure that the purposes of the Loan will be accomplished.	PA Section 2.07 (a)	Complied with (All states)
MORD and the State shall promptly inform ADB of any condition which interferes with, or threatens to interfere with, the progress of the Project, the performance of its obligations under this Project Agreement, or the accomplishment of the purposes of the Loan.	PA Section 2.07 (b)	Complied with (All states)
ADB, MORD and the State shall from time to time, at the request of either party, exchange views through their representatives with regard to any matters relating to the Project and the Loan.	PA Section 2.07 (c)	Complied with (All states)
MORD and the State shall furnish to ADB all such reports and information as ADB shall reasonably request concerning (i) the Loan and the expenditure of the proceeds thereof; (ii) the items of expenditure financed out of such proceeds; (iii) the Project; (iv) the administration, operations and financial condition of MORD 3 and the State in so far as it relates to the Project; and (v) any other matters relating to the purposes of the Loan.	PA Section 2.08 (a)	Complied with (All states)

Covenant	Reference in Loan Agreement	Status of Compliance
Without limiting the generality of the foregoing, MORD and the State shall furnish to ADB quarterly reports on the execution of the Project and on the operation and management of the Project facilities. Such reports shall be submitted in such form and in such detail and within such a period as ADB shall reasonably request, and shall indicate, among other things, progress made, and problems encountered during the period under review, steps taken or proposed to be taken to remedy these problems, and proposed program of activities and expected progress during the following period.	PA Section 2.08 (b)	Complied with (All states)
Promptly after physical completion of the Project, but in any event not later than 3 months thereafter or such later date as ADB may agree for this purpose, MORD and the State shall prepare and furnish to ADB a report, in such form and in such detail as ADB shall reasonably request, on the execution and initial operation of the Project, including its cost, the performance by MORD and the State of its obligations under this Project Agreement and the accomplishment of the purposes of the Loan.	PA Section 2.08 (c)	Complied with (All states)
MORD and the State shall (i) maintain separate accounts and records for the Project; (ii) prepare annual financial statements for the Project in accordance with accounting principles acceptable to ADB; (iii) have such financial statements for the Project audited annually by independent auditors whose qualifications, experience and terms of reference are acceptable to ADB, in accordance with international standards for auditing or the national equivalent acceptable to ADB; (iv) as part of each such audit, have the auditors prepare a report (which includes the auditors' opinion on the use of the Loan proceeds and compliance with the financial covenants of the Loan Agreement and statement of expenditures) and a management letter (which sets out the deficiencies in the internal control of the Project that were identified in the course of the audit, if any); and (v) furnish to ADB, no later than 9 months after the close of the fiscal year to which they relate, copies of such audited financial statements, audit report and management letter, all in the English language, and such other information concerning these documents and the audit thereof as ADB shall from time to time reasonably request.	PA Section 2.09 (a)	Partially Complied with (All states). Annual audits were conducted by statutory auditors, However, separate accounts for each project were not maintained.
ADB shall disclose the annual audited financial statements for the Project within 30 days of the date of their receipt by posting them on ADB's website.	PA Section 2.09 (b)	Complied with (All states)
MORD and the State shall enable ADB, upon ADB's request, to discuss the financial statements for the Project with the auditors appointed by (i) MORD and (ii) the State, and shall authorize and require any representative of such auditors to participate in any such discussions requested by ADB. This is provided that such discussions shall be conducted only in the presence of an authorized officer of MORD or the State, unless MORD or the State shall otherwise agree.	PA Section 2.09 (c)	Complied with (All states)

Covenant	Reference in Loan Agreement	Status of Compliance
In so far as it relates to the Project, MORD and the State shall enable ADB's representatives to inspect the Project, the Goods and Works and any relevant records and documents.	PA Section 2.10	Complied with (All states)
MORD and the State shall, promptly as required, take all action within its powers to carry on its operations, and to acquire, maintain and renew all rights, properties, powers, privileges and franchises which are necessary in the carrying out of the Project or in the conduct of its operations.	PA Section 2.11 (a)	Complied with (All states)
In so far as it relates to the Project, MORD and the State shall at all times conduct its operations in accordance with sound applicable technical, financial, business, rural road development and operational practices, and under the supervision of competent and experienced management and personnel.	PA Section 2.11 (b)	Complied with (All states)
In so far as it relates to the Project, MORD and the State shall at all times operate and maintain its plants, equipment and other property, and from time to time, promptly as needed, make all necessary repairs and renewals thereof, all in accordance with sound applicable technical, financial, business, rural road development, operational and maintenance practices.	PA Section 2.11 (c)	Complied with (All states)
Except as ADB may otherwise agree, MORD and the State shall not sell, lease or otherwise dispose of any of its assets which shall be required for the efficient carrying on of its operations or the disposal of which may prejudice its ability to perform satisfactorily any of its obligations under this Project Agreement.	PA Section 2.12	Complied with (All states)
Except as ADB may otherwise agree, MORD and the State shall apply the proceeds of the Loan to the financing of expenditures on the Project in accordance with the provisions of the Loan Agreement and this Project Agreement, and shall ensure that all items of expenditures financed out of such proceeds are used exclusively in the carrying out of the Project.	PA Section 2.13	Complied with (All states)
MORD shall promptly notify ADB of any proposal to amend, suspend or repeal any provision of the PMGSY Guidelines, which, if implemented, could affect the Project or the operation of the Project facilities.	PA Section 2.14	Complied with (All states)

ECONOMIC ANALYSIS

A. Introduction

1. The Rural Connectivity Investment Program Project 1 (the Project) comprises of two components: (i) a road infrastructure development component and (ii) institutional strengthening component. Under the road infrastructure development component, the Project was to construct about 3,461 km of rural roads to an all-weather standard that are part of the PMGSY with the aim of providing connectivity to all habitations with population of at least 500 persons (250 or more in hilly or desert areas, or scheduled tribe areas);

2. Upon completion of the Project, the direct benefit expected was all-weather road connectivity with an immediate outcome of improved and sustainable connectivity for rural communities in the investment program states to markets, district headquarters, and other centers of economic activity. Investment subprojects were to cover about 3,461 km in total (comprising about 342 km in Assam, 1,008 km in Chhattisgarh, 1,187 km in Madhya Pradesh, 757 km in Odisha, and 167 km in West Bengal).

3. Although the Project was expected to be completed in about 2 years at appraisal, it had significant delays during implementation and has taken over 5 years for completion. The economic reevaluation at completion covers the following 20 years of full operation using 2019 prices. The economic benefits were estimated by comparison of the with-project and without-project cases. The economic reevaluation was carried out for representative sample road sections in investment program states and for whole project.

B. Economic Growth Trends and Traffic Forecast

4. At the appraisal of the project, the actual traffic data from the detailed project reports was considered for the analysis. For the current analysis at completion, the motorized vehicle traffic data for all the sections of the roads under the Project were provided by the implementing agencies of the respective states. Data for non-motorized traffic was not available and was not considered in the economic reevaluation. The average vehicular composition was extracted from the detailed project reports submitted during project preparation stage. The details of traffic on representative road sections considered in the analysis at appraisal is presented in Table A8.1.

Table A8.1: Details of road sections

State	All road sections	Total length Km	Representative road sections considered at Appraisal	Daily Traffic Range (motorized vehicles) 2019
Assam	172	426.43	27	37 – 1170
Chhattisgarh	301	1006.85	32	51 – 600
Madhya Pradesh	232	1178.67	19	27 – 1637
Odisha	211	755.71	20	5 – 872
West Bengal	25	151.12	14	198 – 1592
All States	941	3518.72	112	

km = kilometer.

Source: Data supplied by respective state government

5. Historical traffic data on the project road sections was not available to determine the traffic growth and forecast the traffic for future years. In absence of the data on historical traffic growth on the road sections, as assumed at appraisal,⁴² a direct correlation between growth of the vehicles registered and traffic growth is assumed to arrive at the future traffic growth rates on the project road sections. The growth of registered vehicles provides an indication of the potential for traffic growth. The growth rates for annual vehicle registrations and the growth of GDP for each of the investment program states was used to determine the elasticity of vehicle registration growth. The details of growth in GDP and the growth in registered vehicles along with elasticity is presented in Table A8.2.

Table A8.2: GDP Growth Rates and Growth of Registered Vehicles (%)

State	GDP Growth rate FY 2011 – FY 2016	Growth of Registered Vehicles FY 2011 – FY 2016	Elasticity, Calculated against GDP growth rate
Assam	7.00	12.57	1.80
Chhattisgarh	6.21	11.65	1.88
Madhya Pradesh	8.27	8.52	1.03
Odisha	6.95	11.32	1.63
West Bengal	4.80	10.10 ¹	2.11
All India	6.96	10.05	1.44

km = kilometer; ¹ Growth rate for Annual Vehicle Registration for period from 2013 - 2015.

Source: ^a Reserve Bank of India. 2018-19. Handbook of Statistics on Indian States, New Delhi. ^b Ministry of Road Transport and Highways Transport Research Wing. 2016. Road Transport Yearbook, New Delhi.

6. The annual growth rate by type of the registered vehicles in each of the investment program states is presented in the Table A8.3.

Table A8.3: Growth of Registered Vehicles by type (%), 2010-2015

State	Two-Wheeler	Three-Wheeler	Car/Jeep	Buses	Goods Vehicles	Tractors	Trailers
Assam	12.8	12.4	15.6	7.4	9.2	16.7	12.6
Chhattisgarh	12.1	17.1	10.6	6.5 ¹	9.8	13.4	8.1
Madhya Pradesh	11.3	12.6	14.4	5.5	10.9	9.3	1.1
Odisha	12.4	13.0	13.3	5.3	9.0	12.0	12.4
West Bengal	11.4	3.5	7.3	4.9	6.5	10.9	3.5
India	11.0	6.8	11.1	5.4	7.8	6.8	4.7

¹ Growth rate for Annual Vehicle Registration for period from 2013 - 2015.

Source: Ministry of Road Transport and Highways Transport Research Wing. 2016. Road Transport Yearbook, New Delhi.

7. India has been among the fastest-growing economies in the world over the past few years, lifting millions out of poverty. Indian economy has registered a growth of 6.96% in its gross domestic product over the period from 2011 to 2016. The real GDP has registered an annual growth of 6.4% in 2013 to 7.4% in 2014 and 8.2% in 2016 from the previous years. Based on the

⁴² ADB, Report and Recommendation of the President to the Board of Directors, India: Rural Connectivity Investment Program, June 2012, Manila, Philippines

trend, in 2018, International monetary fund (IMF) has predicted that the growth to be 7.3% in years 2018-19 and 7.5% 2019-20. However, the real GDP growth weakened in 2017-2018 after peaking in the year before, slid down to a five-year low in 2018-2019. IMF has recently revised the growth forecast to 6.1% for year 2019-20 picking up to 7% in year 2020 and to 7.3% for year 2024 and beyond.⁴³ ADB in recent update of the Asian Development Outlook has lowered the growth projections for India from 6.5% to 5.1% in fiscal year 2019 and from 7.2% to 6.5% for year 2020.⁴⁴

8. For analysis purpose, the annual average real GDP growth was considered 6.50% for the five-year period from 2019-2023. It is assumed that some of the newer registered vehicles will be replacing the older vehicles and the growth in the rural areas is likely to be lower than the average growth rates for the respective vehicle type. The estimated growth rates by vehicle type based on the elasticity and the GDP growth were presented in Table A8.4. The traffic growth rates are reduced by 1% every 5 years in the analysis for each vehicle category in the analysis period.

Table A8.4: Adopted Growth rates for Motorized Traffic (%), 2019-2023

State	Two-Wheeler	Three-Wheeler	Car/Jeep	Buses	Goods Vehicles	Tractors	Trailers
Assam	9.0	7.0	9.0	6.0	8.0	5.0	5.0
Chhattisgarh	7.0	9.0	8.0	7.0	9.0	7.0	5.0
Madhya Pradesh	6.0	5.0	10.0	4.0	7.0	5.0	3.0
Odisha	8.0	8.0	9.0	4.0	7.0	7.0	7.0
West Bengal	6.0	2.0	5.0	4.0	6.0	4.0	3.0

9. The detailed project reports for the investment program roads indicate that none of the roads have potential for traffic diversion and hence, no diverted traffic was considered.

C. Project Costs

10. The total construction cost for each investment road section was provided by the implementing agencies and was considered in the economic reevaluation. The construction costs obtained from the state implementing agencies is presented in Table A8.5.

Table A8.5: Construction Costs in each State

State	Financial Cost (Rs million)
Assam	3085.43
Chhattisgarh	3996.94
Madhya Pradesh	4264.25
Odisha	3553.96
West Bengal	843.48

Source: State Governments

⁴³ World Economic Outlook, International Monetary Fund, October 2019, Global Manufacturing Downturn, Rising Trade Barriers, Washington DC, USA

⁴⁴ ADB, Asian Development Outlook Supplement, December 2019, Manila, Philippines

11. According to PMGSY standard maintenance practices in operation, the unit rates for annual routine maintenance costs are estimated to be in the range of Rs 20,000 to Rs 40,000 per km while the periodic maintenance costs are estimated to be in the range of Rs 120,000 to Rs. 160,000 per km⁴⁵ once every five to six years post construction to take care of major repair works. For economic reevaluation of the Project, the recurring average annual routine maintenance costs were considered at Rs 30,000 per km and Rs. 140,000 per km was considered as average periodic maintenance cost occurring every 5 years. The average design life of the roads was assumed to be 20 years and that for structures and bridges as 40 years post construction. Economic costs of construction were derived from the financial construction cost by applying a conversion factor of 0.9. All economic costs were estimated at 2019 constant prices.

D. Project Benefits

12. The savings in vehicle operation costs and passenger travel time costs were considered as direct benefits due to the project and are considered in the current analysis.

i. Value of Travel Time

13. The value of travel time for passenger vehicles was estimated based on the wage rates and income distribution in each state. Value of time for a bus passenger was calculated from agricultural labor wage and skilled labor wage presented in Table A8.6. The income share distribution in India indicates that the top 20% of the population has a 44.4% share of income, the next 20% of the population has 20.5% share of the income and the lowest 60% of the population has an income share of 35.1%. Assuming that these groups represent the car, two-wheeler and bus users, the per capita income index of car, two-wheeler and bus users is 2.22 (44.4/20), 1.025 (20.5/20) and 0.585 (35.1/60) or two-wheeler and car passenger time may be valued at 1.75 and 3.795 times the bus passenger value of time. Shadow wage rate factor was applied to estimate the unskilled labor component in the value of time calculation. The shadow wage rate factors for the investment states ranged from 0.57 to 0.74.⁴⁶ At appraisal the value of travel time was estimated considering the state GDP per capita of the respective state. At completion, the value of travel time was estimated using the wages of agricultural labor and skilled labor. The project road sections (within PMGSY) constructed under the loan are primarily providing all-weather connection to rural areas within respective states. These rural areas consist of significant population that is dependent on agriculture and other works in nearby towns and villages connected by the road sections. Hence, at completion, the estimation of VOT based on wages was considered more appropriate.

Table A8.6: Values of Bus Passenger Working and Nonworking time

State	Wage Rates with Overhead			Weighted daily wage rate	Value of work time (Rs per hour)	Value of non-work time (Rs per hour)
	Agricultural Labor	Skilled Labor	Others			
Assam	189.7	622.4	484.1	512	64.1	16.0
Chhattisgarh	289.2	517.3	430.7	476	59.5	14.9
Madhya Pradesh	188.8	477.4	498.0	418	52.2	13.1

⁴⁵ Ministry of Rural Development, NRRDA (NRIDA), July 2017, ILO_PMGSY Rural Road Project, *Mobilizing funds for Maintenance of Rural Roads – A concept note*

⁴⁶ Estimated based on agricultural and construction worker wages and number of days of employment from wages obtained from Ministry of Labour and Employment, Government of India, 2017-2018. New Delhi

Odisha	192.1	359.6	332.0	333	41.6	10.4
West Bengal	232.8	511.8	409.4	450	56.2	14.1

^aOverhead rate of 33% is taken as per Transport Note No. TRN 15, "Valuation of Time Savings", The World Bank, 2005

^bAssuming the passenger population consisting of workers with equivalent wage rate of 40% agricultural labor, 30% skilled labor and 30% others

^cTaken as 1.5 times skilled worker rate

Source: Consultant's estimate based on wage rate data from Ministry of Labor and Employment, Government of India.

14. The value of time of two-wheeler and car passengers thus estimated is given in Table A8.7. The value of nonworking time is taken as 25% of the working time.

Table A8.7: Values of Two-Wheeler and Car Passenger Working and Nonworking time

State	Value of Work Time (Rs per hour)		Value of Non-work Time (Rs per hour)	
	Two-wheeler Passenger	Car Passenger	Two-wheeler Passenger	Car Passenger
Assam	115.3	243.4	28.8	60.9
Chhattisgarh	107.1	226.2	26.8	56.5
Madhya Pradesh	94.0	198.4	23.5	49.6
Odisha	74.9	158.1	18.7	39.5
West Bengal	101.2	213.7	25.3	53.4

ii. Vehicle Operation Costs

15. All the road sections were single-lane roads in poor to very poor condition prior to the improvement by the Project and are used for two-directional traffic. The improvement of project road sections is expected to yield savings to road users and society in the form of less vehicle operating and time costs for passenger and freight traffic. The unit vehicle operation cost of each type of vehicle was obtained from the HDM4 model developed for a recent rural roads project in India financed by ADB.⁴⁷ The unit vehicle operation cost from the model were adjusted to the 2019 prices⁴⁸ and adopted in the current analysis. The savings in vehicle operation costs adopted in the current analysis are presented in Table A8.8.

Table A8.8: Adopted vehicle operation cost savings (rupees per km)

State	Two-Wheeler	Car/Jeep	Buses	Trucks	Tractors & Trailers
Savings in VOC Rs/km	3.62	6.20	8.79	21.19	15.51

Source: ADB estimates

16. At appraisal, an analysis period of 20 years and a discount rate of 10% (considering the additional benefits provided by the PMGSY all-weather roads, including health, education, agriculture, poverty reduction, employment and income, housing facilities, moveable assets and

⁴⁷ ADB, Second Rural Roads Connectivity Improvement Program, Tranche 2, March 2018, Manila, Philippines

⁴⁸ Ministry of Commerce & Industry, Office of Economic Adviser, Government of India, Values for Wholesale Price Index in India with base 2011-12 = 100; 2018 = 118.9 and 2019 = 122.3, New Delhi

communication which are not included in the analysis) are used. In the current economic reevaluation, analysis period considered was 20 years and 12% discount rate.

E. Economic Internal Rate of Return & Sensitivity Analysis

17. Economic analysis was carried out for the whole project covering all roads under the Investment subprojects. The costs and the direct benefits due to savings in vehicle operation costs and savings in travel time for all project roads was considered in economic analysis.

18. The results of the economic analysis for overall project covering all sections of the Project by each program state was presented in Table A8.9. The EIRR for the whole Project at completion was estimated as 17.69% and NPV at Rs.8,382.53. The EIRR for the whole project is above discount rate.

Table A8.9: Results of Economic Analysis for all Road Sections

State	EIRR at Appraisal *	Overall Project at Completion	
		EIRR (%)	NPV (Rs. Million)
Assam	16.40	17.75%	1732.46
Chhattisgarh	14.70	15.65%	1425.39
Madhya Pradesh	14.40	17.25%	2143.97
Odisha	13.90	17.24%	1826.41
West Bengal	15.90	23.10%	919.98
Whole Project	NA	17.69%	8382.53

* At appraisal only 112 representative sections were considered in analysis with 27 in Assam, 32 in Chhattisgarh, 19 in Madhya Pradesh, 20 in Odisha and 14 in West Bengal. NA = Not Available.

19. The range of EIRR at completion for representative road sections considered at appraisal when accounting for the transport cost savings is presented in Table A8.10.

Table A8.10: EIRR Range at Completion for Road Sections considered at Appraisal

State	EIRR <10%	EIRR 10%-12%	EIRR >=12%	Total
Assam	0 (2)	1	18	19
Chhattisgarh	2 (6)	3	26	31
Madhya Pradesh	0 (2)	0	16	16
Odisha	4 (4)	1	14	19
West Bengal	0 (0)	0	11	11
All States	6 (14)	5	85	96

* Values in parenthesis represent number of sections with EIRR < 10% at appraisal.

20. A sensitivity analysis was carried out to investigate the robustness of the economic viability of the project to changes in cost and benefit. The following cases were analyzed: (i) case1: when the Operation & Maintenance costs are increased by 15%, (ii) case2: when the wages of employees are decreased by 15%, (iii) case3: when cases (i) and (ii) combined. The results of the sensitivity analysis are presented in Table A8.11.

Table A8.11: Results of Sensitivity Analysis

State	Case 1	Case 2	Case 3
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	EIRR (%)	NPV (Rs million)	EIRR (%)	NPV (Rs million)	EIRR (%)	NPV (Rs million)
Assam	17.72%	1721.00	17.01%	1465.88	16.97%	1454.43
Chhattisgarh	15.59%	1398.35	15.38%	1305.45	15.32%	1278.41
Madhya Pradesh	17.18%	2112.31	16.70%	1878.60	16.63%	1846.94
Odisha	17.19%	1806.11	16.59%	1557.95	16.53%	1537.65
West Bengal	23.07%	917.26	22.71%	877.30	22.68%	874.58
Whole Project	17.64%	8289.36	17.15%	7419.50	17.09%	7326.33

21. The economic analysis results above consider only direct and measurable benefits due to the project. Other benefits due to the project that are not considered in the analysis are (i) increased yields and crop diversification in areas along improved project road sections, (ii) increased per capita incomes to communities that are connected with all-weather road due to project, (iii) increased land value along the improved project road sections and (iv) increased employment due to connectivity. In addition, other unquantifiable benefits due to connectivity include access to health, education etc. Data relating to the actual incomes, land values, crop yields, employment and crop diversification along the project road sections is not available for analysis.

22. At the appraisal, the EIRR for 14 representative sections was lower than discount rate 10% (para 16). At completion only six of those sections for yielded EIRR slightly less than 10% (Table A7.10). These sections had less motorized traffic and high construction costs. The data for estimation of the other benefits (para 21) and data for slow moving, non-motorized traffic was not available for analysis.

23. The EIRR at completion for the whole project is above 12 % for all sensitivity cases (Table A8.9 and Table A8.11). The project roads provide basic access to the villages all year long and will have positive impacts on the agricultural productivity and quality of life with better access to health and education in the project area. Hence the Project is considered economically viable as envisaged at appraisal. The detailed cash flows of the EIRR calculations for the project as well as each state is presented in Tables A8.12 – A8.17.

Table A8.12: Whole Project – Cost and Benefit Stream (Rs. million)

Year	Capital Investment	Maintenance Costs	Benefits due to savings in travel time	Benefits due to savings in Vehicle operation cost	Total Benefit - Cost
2013	917.76		0.00	0.00	-917.76
2014	6593.12		0.00	0.00	-6593.12
2015	3659.53		0.00	0.00	-3659.53
2016	1387.28		0.00	0.00	-1387.28
2017	894.62		0.00	0.00	-894.62
2018	1857.59		0.00	0.00	-1857.59
2019		104.07	966.03	2330.38	3192.34
2020		104.07	1109.32	2500.87	3506.12
2021		104.07	1193.25	2663.77	3752.95
2022		104.07	1283.96	2838.21	4018.10
2023		485.66	1382.00	3025.05	3921.39
2024		104.07	1487.30	3222.38	4605.61
2025		104.07	1599.59	3429.87	4925.39
2026		104.07	1719.56	3646.30	5261.79
2027		104.07	1845.88	3873.11	5614.92
2028		485.66	1977.82	4110.98	5603.14
2029		104.07	2118.04	4363.22	6377.19
2030		104.07	2268.26	4631.14	6795.33
2031		104.07	2430.69	4918.45	7245.06
2032		104.07	2600.02	5219.39	7715.34
2033		485.66	2781.44	5539.94	7835.73
2034		104.07	2974.30	5879.38	8749.61
2035		104.07	3180.90	6239.97	9316.80
2036		104.07	3401.27	6622.13	9919.33
2037		104.07	3629.32	7016.52	10541.77
2038		485.66	3872.27	7433.66	10820.27
EIRR (%)					17.69
ENPV (@12%)					8,382.53

EIRR = Economic Internal Rate of Return; ENPV = Economic Net Present Value

Table A8.13: Assam State - Cost and Benefit Stream (Rs. million)

Year	Capital Investment	Maintenance Costs	Benefits due to savings in travel time	Benefits due to savings in Vehicle operation cost	Total Benefit - Cost
2013	63.53		0.00	0.00	-63.53
2014	1504.44		0.00	0.00	-1504.44
2015	762.39		0.00	0.00	-762.39
2016	377.41		0.00	0.00	-377.41
2017	190.13		0.00	0.00	-190.13
2018	102.45		0.00	0.00	-102.45
2019		12.79	263.63	363.23	614.07
2020		12.79	302.54	390.94	680.69
2021		12.79	327.57	420.86	735.64
2022		12.79	354.71	453.18	795.09
2023		59.70	384.14	488.08	812.52
2024		12.79	416.05	525.79	929.06
2025		12.79	450.33	566.14	1003.67
2026		12.79	487.47	609.70	1084.38
2027		12.79	525.67	654.37	1167.25
2028		59.70	562.38	697.20	1199.88
2029		12.79	599.66	740.59	1327.46
2030		12.79	639.68	787.00	1413.89
2031		12.79	683.04	837.13	1507.37
2032		12.79	723.68	884.05	1594.94
2033		59.70	767.17	934.10	1641.57
2034		12.79	812.46	986.09	1785.75
2035		12.79	861.05	1041.69	1889.95
2036		12.79	911.03	1098.76	1996.99
2037		12.79	956.19	1150.31	2093.70
2038		59.70	1001.95	1202.46	2144.71
EIRR (%)					17.75
ENPV (@12%)					1,732.46

EIRR = Economic Internal Rate of Return; ENPV = Economic Net Present Value

Table A8.14: Chhattisgarh State - Cost and Benefit Stream (Rs. million)

Year	Capital Investment	Maintenance Costs	Benefits due to savings in travel time	Benefits due to savings in Vehicle operation cost	Total Benefit - Cost
2013	706.89		0.00	0.00	-706.89
2014	1746.97		0.00	0.00	-1746.97
2015	764.47		0.00	0.00	-764.47
2016	424.23		0.00	0.00	-424.23
2017	186.91		0.00	0.00	-186.91
2018	57.25		0.00	0.00	-57.25
2019		30.21	121.12	637.64	728.56
2020		30.21	138.00	680.12	787.91
2021		30.21	148.33	725.54	843.67
2022		30.21	159.43	774.15	903.38
2023		140.96	171.37	826.17	856.59
2024		30.21	184.21	881.85	1035.85
2025		30.21	197.87	940.85	1108.51
2026		30.21	212.56	1003.97	1186.33
2027		30.21	228.11	1070.57	1268.47
2028		140.96	244.83	1141.86	1245.73
2029		30.21	262.79	1218.17	1450.75
2030		30.21	281.90	1299.06	1550.75
2031		30.21	302.42	1385.64	1657.85
2032		30.21	324.45	1478.30	1772.54
2033		140.96	348.12	1577.50	1784.66
2034		30.21	373.53	1683.72	2027.05
2035		30.21	400.56	1796.34	2166.69
2036		30.21	429.16	1915.24	2314.20
2037		30.21	458.54	2037.03	2465.36
2038		140.96	489.48	2164.97	2513.49
EIRR (%)					15.65
ENPV (@12%)					1,425.39

EIRR = Economic Internal Rate of Return; ENPV = Economic Net Present Value

Table A8.15: Madhya Pradesh State - Cost and Benefit Stream (Rs. million)

Year	Capital Investment	Maintenance Costs	Benefits due to savings in travel time	Benefits due to savings in Vehicle operation cost	Total Benefit - Cost
2013	641.82		0.00	0.00	-641.82
2014	1252.07		0.00	0.00	-1252.07
2015	1314.74		0.00	0.00	-1314.74
2016	473.62		0.00	0.00	-473.62
2017	323.87		0.00	0.00	-323.87
2018	140.54		0.00	0.00	-140.54
2019		35.36	269.31	645.18	879.13
2020		35.36	312.85	700.06	977.55
2021		35.36	334.17	739.02	1037.83
2022		35.36	357.20	780.55	1102.39
2023		165.01	382.10	824.82	1041.91
2024		35.36	409.01	872.06	1245.72
2025		35.36	437.85	921.99	1324.48
2026		35.36	469.05	975.26	1408.95
2027		35.36	501.66	1030.22	1496.51
2028		165.01	536.98	1088.93	1460.89
2029		35.36	575.23	1151.67	1691.54
2030		35.36	616.29	1218.09	1799.02
2031		35.36	660.77	1289.10	1914.51
2032		35.36	708.98	1365.05	2038.67
2033		165.01	761.27	1446.33	2042.59
2034		35.36	816.44	1530.94	2312.02
2035		35.36	875.71	1620.68	2461.03
2036		35.36	940.02	1716.77	2621.43
2037		35.36	1009.82	1819.72	2794.18
2038		165.01	1085.61	1930.07	2850.67
EIRR (%)					17.25
ENPV (@10%)					2,143.97

EIRR = Economic Internal Rate of Return; ENPV = Economic Net Present Value

Table A8.16: Odisha State - Cost and Benefit Stream (Rs. million)

Year	Capital Investment	Maintenance Costs	Benefits due to savings in travel time	Benefits due to savings in Vehicle operation cost	Total Benefit - Cost
2013	469.29		0.00	0.00	-469.29
2014	1228.14		0.00	0.00	-1228.14
2015	719.92		0.00	0.00	-719.92
2016	480.64		0.00	0.00	-480.64
2017	369.20		0.00	0.00	-369.20
2018	188.77		0.00	0.00	-188.77
2019		22.67	256.79	427.14	661.25
2020		22.67	294.30	459.36	730.99
2021		22.67	318.23	494.05	789.61
2022		22.67	344.15	531.39	852.87
2023		105.80	372.23	571.59	838.01
2024		22.67	402.64	614.85	994.81
2025		22.67	435.25	660.96	1073.55
2026		22.67	470.55	710.57	1158.45
2027		22.67	508.77	763.95	1250.04
2028		105.80	550.14	821.38	1265.71
2029		22.67	594.93	883.17	1455.43
2030		22.67	642.94	949.00	1569.27
2031		22.67	694.89	1019.79	1692.00
2032		22.67	751.10	1095.91	1824.34
2033		105.80	810.72	1176.15	1881.07
2034		22.67	875.23	1262.46	2115.01
2035		22.67	944.34	1354.35	2276.02
2036		22.67	1019.08	1453.13	2449.54
2037		22.67	1099.92	1559.31	2636.55
2038		105.80	1187.34	1673.44	2754.98
EIRR (%)					17.24
ENPV (@10%)					1,826.41

EIRR = Economic Internal Rate of Return; ENPV = Economic Net Present Value

Table A8.17: West Bengal State - Cost and Benefit Stream (Rs. million)

Year	Capital Investment	Maintenance Costs	Benefits due to savings in travel time	Benefits due to savings in Vehicle operation cost	Total Benefit - Cost
2013	49.17		0.00	0.00	-49.17
2014	353.22		0.00	0.00	-353.22
2015	196.06		0.00	0.00	-196.06
2016	74.32		0.00	0.00	-74.32
2017	47.93		0.00	0.00	-47.93
2018	99.52		0.00	0.00	-99.52
2019		3.04	55.18	257.20	309.34
2020		3.04	61.64	270.39	328.99
2021		3.04	64.96	284.29	346.21
2022		3.04	68.47	298.94	364.37
2023		14.19	72.16	314.38	372.36
2024		3.04	75.38	327.83	400.17
2025		3.04	78.29	339.94	415.19
2026		3.04	79.94	346.79	423.68
2027		3.04	81.67	354.01	432.64
2028		14.19	83.50	361.61	430.93
2029		3.04	85.43	369.63	452.02
2030		3.04	87.44	377.99	462.40
2031		3.04	89.57	386.80	473.33
2032		3.04	91.81	396.08	484.85
2033		14.19	94.16	405.86	485.84
2034		3.04	96.65	416.16	509.77
2035		3.04	99.24	426.91	523.12
2036		3.04	101.98	438.23	537.17
2037		3.04	104.86	450.15	551.97
2038		14.19	107.90	462.71	556.42
EIRR (%)					23.10
ENPV (@10%)					919.98

EIRR = Economic Internal Rate of Return; ENPV = Economic Net Present Value

CONTRACT AWARDS OF ADB LOAN PROCEEDS

Table A8.1: Annual and Cumulative Contract Awards of ADB Loan Proceeds (\$million)

	Annual Projections		Annual Contract Awards		Cumulative Contract Awards	
	Amount	% of Total	Amount	% of Total	Amount	% of Total
2012	39.49		10.73	4.76%	10.73	4.76%
2013	56.68		170.68	75.68%	181.41	80.43%
2014	155.83		32.19	14.27%	213.60	94.71%
2015			8.36	3.71%	221.96	98.41%
2016			1.75	0.78%	223.71	99.19%
2017			1.76	0.78%	225.47	99.97%
2018			0.07	0.03%	225.54	100.00%
Total			225.54	100%		

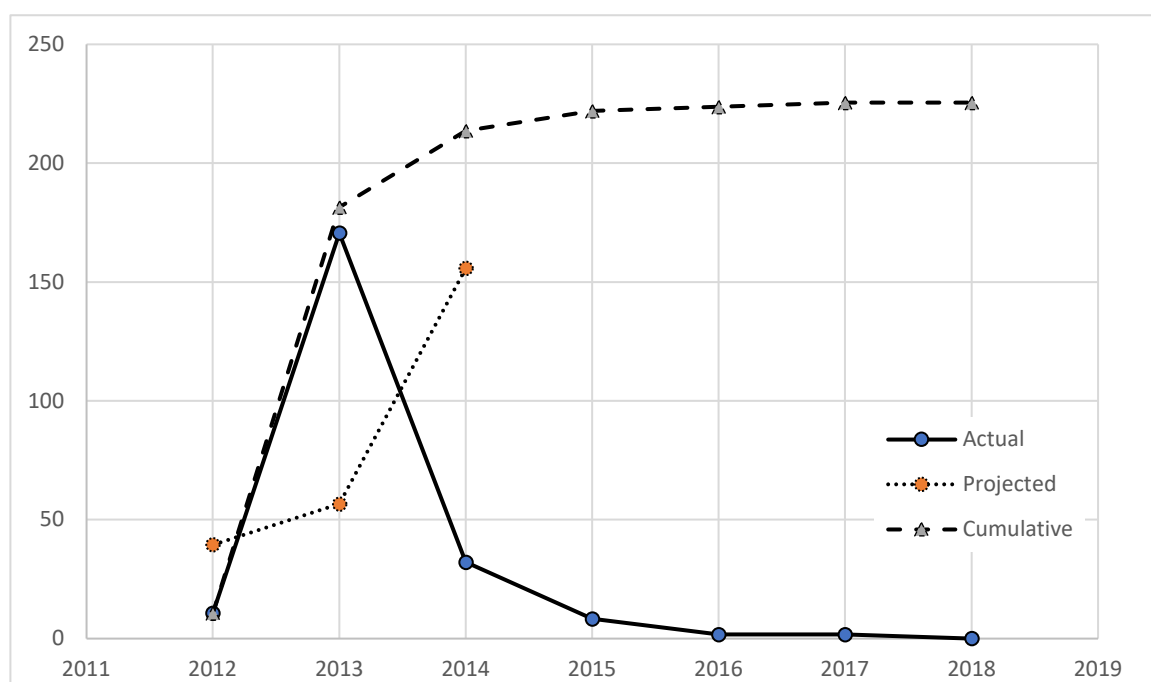


Figure A8.2: Projection vs Cumulative Contract Awards of ADB Loan Proceeds (\$million)

Source: Asian Development Bank

IMPLEMENTATION OF GENDER ACTION PLAN

A. Introduction

1. The Rural Connectivity Investment Program (RCIP) a multi-tranche financing facility (MFF) assists the Government of India rural roads program, Pradhan Mantri Gram Sadak Yojana (PMGSY).⁴⁹ Project 1, envisaged construction and upgradation 3,461 km of priority rural roads to the all-weather standard benefiting 1,600 rural habitations in the states of Assam, Chhattisgarh, Madhya Pradesh, Odisha, and West Bengal (program states). It also envisaged improvement of institutional arrangements, business processes and associated capacity building in design, operation, safeguard, road safety, asset and financial management matters. The project objective was to achieve inclusive socioeconomic growth in the five RCIP states through improved and sustainable connectivity of rural communities to social infrastructure, services, and centers of economic growth through constructing selected priority rural roads to all-weather standard.

2. Project 1 was categorized *effective gender mainstreaming* and included a standalone gender action plan (GAP). The objective was to promote women's participation in project planning, design, and implementation; maximize women's access to project benefits; provide opportunities to increase women's skills, incomes, and participation in decision making; and minimize social vulnerability.⁵⁰

B. Gender Issues

3. The household economies in the RCIP states are primarily agrarian with high incidence of rural poverty. The project preparatory phase data suggests that sample household below poverty line range from 12% in West Bengal, 25% in Assam, 30% households in Chhattisgarh and Odisha to 33% in Madhya Pradesh. Baseline surveys in the project preparatory phase indicate that female headed households in the sample surveyed were 7%, in Madhya Pradesh, 9% in Odisha and Assam and highest 12%, in West Bengal and Chhattisgarh. In all the sample districts women were engaged in agricultural work as main and marginal workers. In Chhattisgarh and Odisha women were also involved in nonskilled construction activities. Social assessments also reveal that sample households understand the direct linkage between road improvement and poverty reduction. The gender issues can be broadly grouped into low female workforce participation, limited access to social infrastructure, gender difference in travel mode and patterns, limited access to development schemes and benefits and male-dominated employment and enterprises opportunities.⁵¹

C. Project Gender Features

4. The gender strategy of RCIP followed a multi-pronged approach with focus on measures that provide equal employment opportunities through affirmative actions, equitable representation in decision-making and planning, gender-responsive capacity development and knowledge products, gender-responsive monitoring, and dedicated human resource. More specifically, the GAP of project 1 included the following elements:

⁴⁹ Pradhan Mantri Gram Sadak Yojana means Prime Minister's Rural Roads Program.

⁵⁰ ADB. 2012. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranchise Financing Facility, Technical Assistance, and Administration of Technical Assistance to the Government of India for the Rural Connectivity Investment Program*. Summary of Poverty Reduction and Social Strategy (accessible from the list of documents in Appendix 2). Manila.

⁵¹ ADB March 2019. India Gender Equality Results Case Study- Rural Connectivity Investment Program, Connecting People, Transforming Lives.

- Promoting women's economic empowerment by creating opportunities for their engagement in skilled and unskilled construction work.
- Planning special mitigation measures for vulnerable female-headed households.
- Ensuring that all contractor agreements include relevant labor clauses and are compliant.
- Creating spaces for women's participation in project planning (road alignment) and in village grievance redressal committees (GRCs).
- Incorporating child, elderly and gender friendly road design features.
- Developing socially inclusive and gender responsive training materials.
- Ensuring women's participation in technical and non-technical rural road capacity development initiatives.
- Strengthening the capacity of project stakeholders in gender mainstreaming; and
- Ensuring that project monitoring mechanisms incorporate gender features and publish sex-disaggregated data.

5. Uniform GAP targets without baselines were assigned for all five RCIP states. In anticipation of the problem of 'uniform target setting', the FAM included a provision allowing the revision of quantitative targets, in consultation with the executing and implementing agencies, based on the results of the baseline survey and impact monitoring. All RCIP states prepared midterm gender assessment reports and fixed state specific targets. The GAP was accordingly revised in the midterm review mission.⁵²

D. Implementation, Monitoring and Reporting Arrangements

6. GAP implementation was supported by the Project Implementation Consultants (PIC) in the RCIP states. Adequate financial and human resources alongside strong technical support were consistently provided and efficiently utilised. The approaches that facilitated the effective implementation of the GAP were (i) routine orientation of project staff and contractors on social and gender aspects, (ii) designation of gender focal persons in the PIC to oversee the implementation and keep track of achievements at each project implementation units (PIUs), (iii) use of standardized formats for contractors to collect sex-disaggregated data on road construction and maintenance labor force, and (iv) designation of gender focal points at the PIUs (footnote 53).

7. GAP activity status and sex disaggregated data was systematically collated and reported independently by each RCIP state. Detailed GAP reports were shared with the NRIDA every quarter. The NRIDA, scrutinized the information and prepared consolidated reports for submission to ADB. The PICs prepared workplans, implemented the activities, and monitored the results.

E. Gender Action Plan Achievements

8. All GAP activities were completed and 92% targets (DMF combined) were achieved (table 1). GAP activities resulted in practical and strategic benefits for women and enabled institutional gender capacities.

- **Improved connectivity and mobility.** At completion, 3,782 km of all-weather priority rural roads were constructed, directly benefited 1,787 rural habitations with 10% female headed and 46% vulnerable households.⁵³ Improved connectivity has resulted in poverty alleviation and

⁵² Aide Memoire of the Mid Term Review Mission, 11 March to 14 May 2015.

⁵³ The average female headed household (Rural) for the five states as per Census 2011 (Assam: 11%, Chhattisgarh: 10.8%, Madhya Pradesh: 7.2%, Odisha: 10.4% and West Bengal: 9.8%).

expanded economic opportunities, better access to reproductive health-care services, quality education, and improved service delivery (footnote 53). The women beneficiaries highlighted, safe mobility, increased productivity, improved access to development programs and services as crucial project benefits (Box 3).

- **Women's economic empowerment.** Women comprised 197,160 (37%) of road construction and 36,735 (44%) of road maintenance workers. All RCIP states reported 100% compliance with labor laws. The standard bidding document included gender-related provisions (e.g., engagement of women, equal pay for work of equal value, and child labor prohibition).
- **Gender equality in leadership and decision-making.** Women participated in transect surveys for the identification of road alignment. 621 village GRCs, which were crucial in creating the much-needed interface between the community and the project, were constituted with at least 30% female representation. Women's representation in Village GRCs enabled them to influence road design, alignments, redressal of complaints, community participation in road construction and maintenance (Box 2).
- **Gender equality in human capital development in transport sector.** The RCTRCs were leveraged as a crucial entry point for developing capacities in gender mainstreaming and achieving gender equality results. The RCTRCs used socially inclusive and gender-responsive training methods and approaches. In all, 119 trainings were organized in the five RCTRCs for PIU staff (12% female participation), PRI representatives (37% female participation), design consultants, and contractors. Gender and social safeguard trainings are part of the training curriculum in these centers. A specialized module for PRI representatives titled 'Social and Gender Responsive Design, Construction and Maintenance of Rural Roads – Role of Panchayati Raj Institutions', was developed and piloted in Madhya Pradesh RCTRC. The RCTRCs infrastructure is gender responsive and compliant to the needs of people with disability. Special hostel facilities are also provided for female participants to maximize their participation in the trainings. Gender capacity building initiatives impacted decisions related to the assignment of responsibilities at the PIUs. For instance, PIUs in Tikamgarh, Jabalpur, and Vidisha in Madhya Pradesh deployed female junior engineers in the field challenging traditional gender norms and stereotypes. This created a ripple effect whereby female community participation in awareness programs increased manifold due to the presence of female field staff. Women in villages felt free to participate in meetings, which traditionally were attended by only men (footnote 53).
- **Affirmative measures for vulnerable female headed households.** Vulnerable beneficiaries were identified in each project road, and their needs assessed. The project assisted 100% FHH linkage (for those interested) to government development programs related to poverty alleviation, social security and economic empowerment. 865 vulnerable and FHH were linked to central and state funded development schemes (refer Box 1).

Table 1: GAP Achievements Matrix

Activities and Targets/ Indicators	Achievements	Assessment																																			
Output 1. Selected priority rural roads prioritized by PMGSY for 2012 sanctions are constructed to all weather standard.																																					
<p>Activity 1. Hire women workers for skilled and unskilled work in road construction and maintenance. Ensure equal wages for equal work done to both male and female skilled and unskilled labor in project works.</p> <p>Target 1. At least 33% of workers hired in road construction works are women. (Target for each state revised in MTR based on the results of the baseline survey to 20% in Assam and 10% in West Bengal keeping 33% in Madhya Pradesh, Chhattisgarh, and Odisha).⁵⁴</p>	<ul style="list-style-type: none">Women in rural Assam, Odisha, and West Bengal prefer to work in the agriculture sector. Hence, female participation in construction work decreases during the sowing and harvesting periods.The RCIP states overachieved their respective targets. In all, of the 529,362 road construction workers hired, 197,160 (37%) were women with the following break-up: <table><tr><th>State</th><th>Total workers</th><th>Men</th><th>Women</th><th>%</th></tr><tr><td>Assam</td><td>50, 801</td><td>34,146</td><td>16,655</td><td>32.78</td></tr><tr><td>Chhattisgarh</td><td>18, 503</td><td>7,655</td><td>10,848</td><td>58.63</td></tr><tr><td>Madhya Pradesh</td><td>8, 265</td><td>4,499</td><td>3,766</td><td>45.56</td></tr><tr><td>Odisha</td><td>446,766</td><td>282,407</td><td>164,358</td><td>36.79</td></tr><tr><td>West Bengal</td><td>5,027</td><td>3,494</td><td>1,533</td><td>30.49</td></tr><tr><td>Total</td><td>529, 362</td><td>332,201</td><td>197,160</td><td>37%</td></tr></table> <ul style="list-style-type: none">The provision of equal wages for equal work done by male and female skilled and unskilled labour in the project works were incorporated in the bidding documents and strict adherence was ensured.	State	Total workers	Men	Women	%	Assam	50, 801	34,146	16,655	32.78	Chhattisgarh	18, 503	7,655	10,848	58.63	Madhya Pradesh	8, 265	4,499	3,766	45.56	Odisha	446,766	282,407	164,358	36.79	West Bengal	5,027	3,494	1,533	30.49	Total	529, 362	332,201	197,160	37%	<p>Activity completed</p> <p>Target 1 achieved</p>
State	Total workers	Men	Women	%																																	
Assam	50, 801	34,146	16,655	32.78																																	
Chhattisgarh	18, 503	7,655	10,848	58.63																																	
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West Bengal	5,027	3,494	1,533	30.49																																	
Total	529, 362	332,201	197,160	37%																																	
<p>Activity 2. Ensure that contract documents prohibit the hiring of child labor.</p> <p>Explicit provision prohibiting child labor is evident in project contracts.</p>	<ul style="list-style-type: none">The Standard Bidding Document prohibits child labour in compliance with the Prohibition and Regulation Act 1986. This was included and compliant for 100% contracts. Strict adherence was ensured through routine inspections and punitive actions.⁵⁵	<p>Activity completed</p>																																			

⁵⁴ Pursuant to GAP footnote, i.e. "Quantitative targets will be refined at project onset in consultation with the EAs and IAs based on the results of the baseline survey and impact monitoring", the targets were reviewed and revised during MTR (11 Mar- 14 May 2015).

⁵⁵ Bidding Document F. Other Conditions of Contract: The Contractor shall not employ any child to perform any work, including work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the Child's health or physical, mental, spiritual, moral, or social development. "Child" means a child below the statutory minimum age of 14, as specified under applicable national, provincial, or local law of the relevant State of India.

Activities and Targets/ Indicators	Achievements	Assessment
<p>Activity 3. Ensure that impact on vulnerable female-headed households due to road construction is mitigated.</p> <p>Target 2. All affected FHH directly benefit from appropriate mitigation measures, and/or linked to poverty alleviation/livelihood restoration programs.</p>	<ul style="list-style-type: none"> Of 1,539 identified vulnerable and female-headed households (VFHH), 865 (56%) expressed interest in being linked to development schemes and were assisted. Schemes were related to livelihood (Mahatma Gandhi National Rural Employment Guarantee Act), rural housing programs (Pradhan Mantri Garin Awaas Yojana), agriculture credit (Kisan Credit Card) and other government subsidy programs, health and pension. Other 674 (44%) VFHHs were either already linked or not interested. 	<p>Activity completed</p> <p>Target 2 achieved</p>
Output 2. Quality of design of RCIP roads is improved.		
<p>Activity 4. Involve women from the affected communities in project areas in the identification of road alignment and decision making during the transect walk.</p>	<ul style="list-style-type: none"> 100% affected communities were consulted in the design process including 1,539 (100%) identified vulnerable and female-headed households. As required under the PMGSY guidelines, the views of affected women are documented in transect walk reports prepared before DPRs are finalised. Women participant views include those related to road alignment, safety features, land requirement and HH requirement to link with development schemes. 	<p>Activity completed</p>
<p>Target 3 (aligned with DMF Indicator 2.2). 100% of all affected communities along project 1 roads (at least 30% women) are consulted in the design process.</p>		<p>Target 3 achieved</p>
<p>Activity 5. Women are represented in Grievance Redress Committees (GRCs).</p> <p>Target 4. At least 30% members in each GRCs are females.</p>	<ul style="list-style-type: none"> The Village level grievance redressal committees (GRCs) is an effective institutional mechanism planned under PMGSY for social accountability and oversight. In the MTR a mandatory 30% quota for female representation was included. 621 GRCs were constituted and ensured minimum 30% female representation.⁵⁶ The mandatory quota for female representation in this important institutional mechanism has created the space for women's participation, voice and agency. Female GRC members have influenced road design, alignment and ensured entitlements to V&FHH. 	<p>Activity completed</p> <p>Target 4 achieved</p>
Output 3. Maintenance of RCIP roads is improved and sustainable.		
<p>Activity 6. Engage women as road maintenance workers or supervisors for road maintenance.</p>	<ul style="list-style-type: none"> Of 83,693 workers hired, 36,735 (44%) were women and 46,958 (56%) were men. The village women (mostly marginalized and unskilled workers) were engaged in the strengthening of earthen shoulders, tree plantation and prevention of erosion of shoulders. 	<p>Activity completed</p>
<p>Target 5 (aligned with DMF Indicator 3.1). At least 33% of road maintenance workers/ hired for</p>		<p>Target 5 achieved</p>

⁵⁶ This indicator was included in the Mid Term Review, 11 March to 14 May 2015. Data for 30% female representation in GRC is collated for the GRCs constituted after third quarter of 2015.

Activities and Targets/ Indicators	Achievements	Assessment
strengthening of earthen shoulders, tree plantation along the shoulders for a forestation and prevention of erosion of shoulders are women.		
Activity 7. Ensure the engagement of women in each of the Rural Road Network Management Units (RRNMUs) to be established in each state.	<ul style="list-style-type: none">No new staff were hired for RRNMU positions. Rather, present staff were deputed from the existing human resource pool of the implementing agency in each state.The 5 RRNMUs have 12% female staff.⁵⁷	Activity completed
Target 6 (aligned with DMF Indicator 3.1) At least 25% of the new staff to be engaged in each RRNMU in each of the 5 states are women (Target for each state revised based on the results of the baseline survey: ranging from 5% for Madhya Pradesh to 10% for Assam) (Footnote 56).		Target 6 achieved
Output 4. Road safety measures are incorporated into the lifecycle of roads in RCIP states.		
Activity 8. Consider the specific needs of vulnerable users such as the elderly, children, women and disabled (ECWD) in the design and modification of roads, wherever applicable. <ul style="list-style-type: none">Road safety design features installed in rural roads (e.g., speed bumps, rumble strips, zebra crossings, cautionary/ informative signage, guard stones, shoulders used as safe sidewalks).	<ul style="list-style-type: none">As provided in the PMGSY guidelines, the road designs considered the specific needs of the ECWD. These provisions are indicated in the detailed project reports (DPRs).All project roads included provisions for speed breakers, rumble strips, cautionary and informative signages at required locations.The road design features were firmed up based on community consultations, technical staff inputs from site visits and review of the detailed project reports.RSA of 198 design roads found 37% of these roads compliant with prescribed road safety design features. 114 roads in Assam, 60 roads in Chhattisgarh, and 24 roads in Madhya Pradesh underwent road safety audits.44% of design roads and 22% of existing roads that underwent RSA were improved.	Activity completed
Target 7. DMF Indicator 4.1 (not in the GAP). At least 10% of project 1 designs in Assam, M.P and Chhattisgarh undergo road safety audits (RSAs) and improved accordingly, with emphasis on vulnerable road users.		Target 7 achieved
Target 8. DMF Indicator 4.2 (not in the GAP). By the end of project 1 (2015) in 5 RRNMU districts, at least 20% of design and 10% of existing rural road network undergo RSAs annually and improved accordingly with emphasis on vulnerable road users.		Target 8 achieved
Activity 9. Ensure women's participation in community orientation and road safety awareness campaigns.	<ul style="list-style-type: none">Of 60,764 participants of road safety orientation and awareness programs, 24,423 (40%) were women and 36,341 (60%) were men.	Activity completed

⁵⁷ 12% in Assam, 17% in Chhattisgarh, 5% in Madhya Pradesh, 33% in Odisha and 50% in West Bengal. Also note that the government staff is on additional charge and on rotation so female representation may vary with every transfer and retirement (also refer para 12 and 50 of PCR main text).

Activities and Targets/ Indicators	Achievements	Assessment
	importance of quality reporting of gender equality results; promote lateral learning through peer to peer experience sharing on GAP implementation, monitoring and reporting; 35 participants including 7 (20%) women from five RCIP states benefitted from the training.	
<p>Activity 12. Train design consultants, contractors and PRIs on the social- and gender-sensitive design, construction and maintenance of rural roads.</p> <p>Target 12. All project design consultants and contractors and at least 10 PRIs capacitated on social- and gender sensitive design, construction, and maintenance of rural roads.</p>	<ul style="list-style-type: none"> • Routine field orientations were organized for contractors on social safeguards, children and gender contract compliance obligations. Contractors were also encouraged to promote female workforce participation and maintain sex disaggregated data on labor force. Standard formats on labor force participation were introduced for field data entry and consolidation at the PIU level. • A specialized module for PRI representatives titled 'Social and Gender Responsive Design, Construction and Maintenance of Rural Roads – Role of Panchayati Raj Institutions', was developed and piloted in Madhya Pradesh RCTRC. • 16 elected representatives (PRI members) including 37% elected women representatives attended the training. 	<p>Activity completed</p> <p>Target 12 achieved</p>
Output 6. Effective project management provided.		
<p>Activity 13. Collect sex-disaggregated data during the baseline survey and conduct a gender analysis during preparatory surveys, feasibility studies, assessments and reports.</p> <ul style="list-style-type: none"> • Reports on the baseline survey, feasibility studies especially poverty and social assessment study and assessments include clear gender analyses with sex disaggregated data. 	<ul style="list-style-type: none"> • The baseline survey and feasibility studies included poverty and social assessments that were based on sex-disaggregated data. These were incorporated in the social poverty reduction and social strategy of the program. • The RCIP states prepared and submitted analytical midterm assessment with sex-disaggregated baseline data, which were used to revise state specific gender targets. • A gender equality results case study was also published with case studies on socio economic impact from a gendered perspective.⁵⁸ 	<p>Activity completed</p>
<p>Activity 14. Select gender specific indicators and target monitored and regularly updated with sex-disaggregated data.</p> <ul style="list-style-type: none"> • Select gender specific indicators and targets monitored and reported quarterly. 	<ul style="list-style-type: none"> • As a standard practice of the RCIP states, data on six project specific gender indicators were monitored and updated quarterly and submitted as part of GAP reports. • The indicators include (i) number and percent of female-headed households and residents from vulnerable groups that are newly connected by RCIP roads, (ii) number of FHHs identified and linked with Government of India or State Government development schemes, (iii) number of male and female workers in road construction and maintenance, (iv) number of female and male members of GRCs, and (v) number of female staff in RRNMU and RCTRCs. 	<p>Activity completed</p>

⁵⁸ Footnote 53.

Activities and Targets/ Indicators	Achievements	Assessment
<p>Activity 15. Appoint a social and gender officer at the PIU or PIC level.</p> <p>Effective social and gender officer engaged at the PIC level.</p>	<ul style="list-style-type: none"> • Social and gender specialist were appointed in the PICs of all five RCIP states. • The implementing agencies in each state advised PIUs to nominate a gender focal point to oversee GAP implementation at the PIU level. The PIU gender focal were also nominated to assist in ADB gender and social safeguards trainings. 	<p>Activity completed</p>
<p>Overall GAP assessment: Successful.⁵⁹</p>		

DMF = design and monitoring framework; DPR = detailed project report; ECWD = elderly, children, women, and disabled; FHH = female-headed household; GAP = gender action plan; GRC = grievance redress committee; PIC = project implementation consultant; PIU = project implementing unit; PMGSY = Pradhan Mantri Gram Sadak Yojana; PRI = Panchayati Raj Institutions; RCIP = Rural Connectivity Investment Program; RCTRCs = Rural Connectivity Training and Research Centers; RRNMU = Rural Road Network Management Units; RSA = road safety audit; VFHH = vulnerable and female-headed households; VGRC = village grievance redress committee

⁵⁹ All GAP activities were completed, and 100% quantitative targets were achieved.

F. Evidence of Project Outcomes on Women

9. Testimonials of women beneficiaries were collected to supplement the achievements presented in the GAP achievements matrix (Boxes 1, 2 and 3).

Box 1. Overcoming vulnerability and deprivation

Since my husband's demise I have been living by myself as a poor farmer. I requested the PIC for livelihood assistance not far from my home. The PIC facilitated my linkage with the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNRGS) and issued me a job card. Since then, I have participated in various construction works. As my age prohibits me from traveling far for work, the linkage helped me access livelihood options near my home. This small initiative of the project has helped me live a life of self-sufficiency. Also, I have put up a small business of selling agricultural products in the local market. I thank PMGSY (RCIP) for helping me live a life of dignity.

Source. Hemlata Devi, District Morigaon, Assam

Box 2. Women's voice and agency

We are women village grievance redressal committee (VGRC) members in block Balikuda, Odisha. In our habitation, the 6.5 km road in Ramtola village was expected to benefit 1,392 villagers as a priority road under PMGSY. However, the construction was stalled because the private landowners refused to give up their land. As the demand for the road was gaining momentum, especially among poor village women, a VGRC was formed with 35% women members to persuade the landowners. We mobilized women's support and negotiated with the landowners. In the end we succeeded by employing our collective voice. The resolution was passed, and the road was constructed.

Source. Female VGRC members-Anita Mallik, Minati Sahoo, Pankajini Lenka, Chandrakanti Kandi and Bilasini Raula. Block Balikuda, Odisha

Box 3. Safe mobility and access to services

I, along with my friends, could not pursue our high school studies because the senior high school was far from the village and our parents would not permit us to travel far. I was also worried of the age-old trend in the village of girls dropping out of school. Then, RCIP built roads from our village to the gram panchayat where the high school is located. This reignited our dream of higher education. We can now use our bicycles to reach school without any difficulty. The improved roads also allayed the fears of parents and made them allow their daughters to enroll in higher grades. Life has changed for the girls who want to spread their wings and live their dreams, all thanks to the newly constructed road

Source: Diksha Pandey, Sira Village, Madhya Pradesh.

G. Lessons Learned

10. The following factors contributed to the efficient and effective delivery of GAP activities and the achievement of gender equality results.

- **Efficient monitoring system.** The NRIDA conducted regular monitoring of GAP progress and achievements. Standard practices and formats for field data collation and reporting were crucial entry points. Quantitative data across each activity was carefully monitored and stored and managed. Beneficiary data was sex disaggregated. GAP reports were supplemented with analytical excerpts, photographs and documentary evidence.
- **Capacity development.** The RCTRCs took steps to ensure that: (i) female participation in training programs was encouraged, (ii) training data were sex-disaggregated, (iii) social inclusion and gender-responsive elements were included in training modules, and (iv) social inclusion

gender equality, social and environment safeguard sessions were mainstreamed in routine trainings.

- **Institutional measures to promote gender equality.** The implementing agencies at the state level issued directives to designate gender focal points. This was nominated at the PIU level and was an effective strategy for GAP implementation monitoring and oversight.
- **Social safeguards and GAP implementation practices.** Each RCIP state adopted innovative strategies and good practices for efficient and effective GAP implementation, monitoring, reporting and gender capacity development. A compendium of these good practices, to enable cross-learning and replication will be a value addition towards gender mainstreaming goals in the transport sector.

H. Conclusion and Recommendations

11. The implementation of the GAP provided direct gender equality benefits in the form of opportunities for female workforce participation, human capital development, vulnerable and gender-responsive infrastructure design, and enabling women's participation in decision-making. It has also resulted in institutional gender capacity building. Recommendations (Footnote 57) for future projects based on the lessons learnt (also refer para 14, 51,55 and 56 of PCR main text):

- **Recommendations for improved gender equality design features.** (i) initiatives related to awareness raising and action research on gender-based violence and trafficking; (ii) additional infrastructure design features (street lighting, sidewalks, roadside benches at stops, and safe crossings) in coordination with line department schemes; (iii) access to rural housing schemes, especially for vulnerable women⁶⁰; (iv) training opportunities for rural women in skilled road construction, maintenance and supervision through RCTRCs for sustained employment in road construction work; (v) contractors to provide onsite skilling opportunities for unskilled female labors to enhance their human capital. An incentive component for contractors can be integrated to encourage the skilling and hiring of women in skilled category of works; (vi) a mentoring and capacity building component for women GRC representatives given the 33% mandate for female representation; (vii) a capacity building component for women contractors to build their capacities to compete with male contractors and open opportunities to bid for RCIP and PMGSY contracts; and (viii) implement peer learning initiatives across PMGSY development partners on social and gender good practices.
- **Recommendations for strengthening institutional mechanisms to promote and strengthen gender equality results.** (i) enhance female participation in capacity building programs organized in the PMGSY training and research centers; (ii) social and gender components to be integrated in routine trainings held in these centers; (iii) social and gender capacity building to be integrated in routine trainings for contractors; (iv) replicate and institutionalize trainings for PRI representatives on 'social and gender responsive design, construction and maintenance of rural roads' (para 14, PCR main text); and (v) A policy

⁶⁰ The scope of the National Rural Roads Development Agency, now National Rural Infrastructure Development Agency (NRIDA), has been recently expanded to include a housing component. The project design can consider including measures to assist the homeless, vulnerable, and female-headed households (FHHs) in subprojects to access this component.

intervention to upscale gender mainstreaming across the PMGSY scheme based on RCIP experience. This initiative will result in sustaining the RCIP gender mainstreaming good practices across all rural roads projects.

PHYSICAL ACHIEVEMENTS AND EIRR AT APPRAISAL AND COMPLETION

States	Physical Achievements – Road Network			Economic Internal rate of return (EIRR)	
	Targeted at Appraisal (km)	Achieved at Completion (km)	% achievement	Appraisal	Completion
Assam	342.00	422.00	123%	16.40%	17.75%
Chhattisgarh	1,008.00	1,007.00	100%	14.70%	15.65%
Madhya Pradesh	1,187.00	1,492.00	125%	14.40%	17.25%
Odisha	757.00	711.00	93%	13.90%	17.24%
West Bengal	167.00	150.00	89%	15.90%	23.10%
Total	3,461.00	3,782.00		Not Available	17.69%

CONTRIBUTION OF RCIP TO ADB'S RESULTS FRAMEWORK

Pillar	Result Framework Indicator	Achievements
Operational Priority 1: Addressing Remaining Poverty and Reducing Inequalities, 2019-2024		
Pillar 3 Opportunities for the most vulnerable increased	1.3. Poor and vulnerable people with improved standards of living (number)	1,787,000 poor and vulnerable people with improved standards of living.
	1.3.1. Infrastructure assets established or improved (number)	941 all-weather connectivity rural roads (3,782 KM) constructed
	1.3.3. Measures for increased inclusiveness supported in implementation (number)	1 measure (linkages of vulnerable and female headed HH with poverty alleviation programs of the government).
Operational Priority 2: Accelerating Progress in Gender Equality, 2019-2024		
Pillar 1 Women's economic empowerment increased	2.1.4. Women and girls benefiting from new or improved infrastructure (number)	857,760 (48%) women and girls benefited from the new improved infrastructure.
Pillar 3 Women's participation in decision-making and leadership enhanced	2.3.1. Women with strengthened leadership capacities (number)	1,682 women leadership capacities strengthened ⁶¹
	2.3.2. Measures on gender equality supported in implementation (number)	1 measure on gender equality (30% quota on female representation in Village Grievance Redressal Committees)
Operational Priority 3: Tackling Climate Change, Building Climate and Disaster Resilience, and Enhancing Environmental Sustainability, 2019-2024		
Pillar 1 Mitigation of climate change increased	3.1.5. Low-carbon solutions promoted and implemented (number)	2 low carbon solutions promoted and implemented. ⁶²
Operational Priority 5: Promoting Rural Development and Food Security, 2019-2024		
Pillar 1 Rural development enhanced	5.1.1. Rural infrastructure assets established or improved (number)	941 number of rural roads constructed
Operational Priority 6: Strengthening Governance and Institutional Capacity		
Pillar 1 Improved public and corporate sector management functions and financial stability	6.1.1. Government officials with increased capacity to design, implement, monitor, and evaluate relevant measures (number)	3,339 PIU staff trained in rural road management.
	6.1.4. Transparency and accountability measures in procurement and financial management supported in implementation (number)	1 measure in procurement supported in implementation (e-tendering upscaled in PMGSY)
Pillar 2 More effective, timely, corruption-free and citizen-centric delivery of services	6.2.4. Citizen engagement mechanisms adopted (number)	One citizen engagement mechanism (Village Grievance Redressal Committee) established.

⁶¹ Refer para 8, bullet on 'Gender equality in leadership and decision-making' and Box 2 in Appendix 10.

⁶² Environment friendly and cost-effective construction practices, such as use of cold mix bitumen in pavement which provides quicker laying, cost savings and reduced carbon emissions and the use of plastic waste in pavement, reducing the usage of conventional bitumen, cost of construction and maintenance