

# Annual Environmental Monitoring Report

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March 2015

## India: Rural Connectivity Investment Programme - Project 2

## ABBREVIATIONS

ADB	:	Asian Development Bank
CD	:	Cross Drainage
EARF	:	Environment Assessment Review Framework
ECOP	:	Environmental Codes of Practice
EMP	:	Environmental Management Plan
FFA	:	Framework Financing Agreement
GOI	:	Government of India
GRC	:	Grievances Redressal Committee
IA	:	Implementing Agency
IEE	:	Initial Environmental Examination
MFF	:	Multitranches Financing Facility
MORD	:	Ministry of Rural Development
NGO	:	Non-Government Organization
RCIP	:	Rural Connectivity Investment Programme
NRRDA	:	National Rural Road Development Agency
NREGP	:	National Rural Employment Guarantee Program
PIU	:	Project Implementation Unit
PIC	:	Project Implementation Consultants
PFR	:	Periodic Finance Request
PMGSY	:	<i>Pradhan Mantri Gram Sadak Yojana</i>
ROW	:	Right-of-Way
RRP	:	Report and Recommendation of the President
RCIP	:	Rural Connectivity Investment Program
SRRDA	:	State Rural Road Development Agency
TSC	:	Technical Support Consultants

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## I. Introduction

### A. Environmental Monitoring and Reporting

1. Environmental monitoring is the periodic collection of data used by the Asian Development Bank (ADB) and the National Rural Road Development Agency (NRRDA) in determining compliance of the project against approved environmental management and monitoring plans, loan covenant, and statutory requirements. Site inspection, a key step in environmental monitoring, also allows the identification of unanticipated impacts from the implementation of a project. Regular data collection is performed mainly by the Contractor through the status reporting on the environmental management plan implementation (EMP) as part of the of the civil works contract. The State Rural Road Development Agency (SRRDA) appointed Project Implementation Consultant (PIC) conducts periodic supervision of the contractor's implementation.

2. Environmental monitoring and its annual disclosure is a requirements of the ADB for environmental category B projects like Rural Connectivity Investment Program (RCIP) – Project 2. Environmental monitoring and the preparation of this annual environmental monitoring report is the responsibility of the NRRDA. This report was prepared by the Technical Support Consultant (TSC) of the National Rural Road Development Agency (NRRDA) that summarizes the overall environmental compliance performance of the Programme across the fives RCIP states, namely: Assam, Chhattisgarh, Madhya Pradesh, Odisha, and West Bengal based on sample individual road monitoring at different stages of road development, namely: pre-, during-, and post-construction<sup>1</sup>. This annual environmental monitoring report covers all activities under Project 2 as of March 2015.

### B. The *Pradhan Mantri Gram Sadak Yojna* and RCIP

3. The Government of India is addressing the absence of all-weather road connectivity, officially defined as areas that are in-accessible 90 days of the year, through the implementation of a nationwide rural road investment program—the *Pradhan Mantri Gram Sadak Yojna* (PMGSY) or Prime Minister's Rural Roads Program. The PMGSY started implementation in year 2000 to provide all-weather road connectivity to all rural habitations with a population of more than 500 persons in plains and 250 in hill states. This program is being implemented by the National Rural Road Development Authority (NRRDA) of the Ministry of Rural Development (MORD) through State Rural Road Development Authority/Agencies (SRRDA).

4. The ADB Project 40423 “Rural Connectivity Investment Program” (RCIP) supports the PMGSY through a multi-tranche financing facility (MFF) modality that will construct or upgrade to all-weather standard about 9,000 km of rural roads connecting around 4,800 habitations in the states of Assam, Chhattisgarh, Odisha, Madhya Pradesh and West Bengal. To be implemented in three discrete Projects. RCIP-Project 1 (Loan 2881-IND) covers about 3,524 kms of rural roads with a loan amount of about \$381.44 million. RCIP Project 2 (Loan 3065) covers 3,693 kms distributed as follow: 495.6 km in Assam, 429.1 kms in Chhattisgarh, 654.04km in Madhya Pradesh, 1,184.06 in Odisha, and 930.1 kms in West Bengal. Project 2 was approved by the ADB on 25 November 2013 and the load was effective on 31 March 2014. One year after, Project 2 has disbursed US\$M45.23 or about 18% of the total loan amount. Chhattisgarh and Madhya Pradesh has awarded all civil works packages to date. Odisha with the largest share accounting for 33% of the total Project 2 loan amount, and bigger than the Chhattisgarh and Madhya Pradesh combined, has only awarded 67% of the allotted civil works packages.

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<sup>1</sup> These stages of road development is based on physical progress of road construction. From 0-25% is considered as pre-construction, 25-75% as during construction, and 75-100% as post construction.

**Table 1: Status of Contract Award and Disbursement of Civil Works (Roads) Under Project 2**

RCIP States	Loan amount for each state (\$M)	Number of Packages	Number of Packages Awarded	% of Total Packages	Awarded Cost	Cumulative Disbursement	% disbursement of Total Loan
Assam	36.18	196	163	83%	33.11	4.97	14%
Chhattisgarh	26.59	43	43	100%	32.06	7.31	27%
Madhya Pradesh	36.26	82	82	100%	47.58	12.52	35%
Odisha	83.52	281	187	67%	75.44	3.58	4%
West Bengal	70.5	128	116	91%	63.77	16.85	24%
<b>Total</b>	<b>253.05</b>	<b>730</b>	<b>591</b>	<b>81%</b>	<b>251.96</b>	<b>45.23</b>	<b>18%</b>

Source: ADB. Loan Fact-Finding Mission for the Proposed 40423-IND: Rural Connectivity Investment Program-Project 3; (25 February-13 March 2015)

5. Overall, RCIP Project 2 achieved 18% loan disbursement as of March 2015, with the states of Chhattisgarh and Madhya Pradesh achieving 27% and 35%, respectively. Physically, 16% of the target road length construction and 13% of the habitation to be connected were achieved. Leading state in terms of physical accomplishment is West Bengal with 39 roads completed with a total length of 201 kms representing 22% of the target.

**Table 2: Status of Project Implementation for RCIP Project 2 (Road Infrastructure Component)**

RCIP States	Target Outputs			Achieved (actual)			Achieved (%)	
	Number of Roads	Total Length (km)	Habitations connected	Number of Roads	Total Length (km)	Habitations Connected	Length of road	Habitations Connected
Assam	202	499.57	314	3	7	13	1%	4%
Chhattisgarh	132	429.06	169	25	99.3	19	23%	11%
Madhya Pradesh	254	654.04	257	74	232	74	35%	29%
Odisha	343	1184.06	435	0	56.99	0	5%	0%
West Bengal	130	930.09	519	39	200.74	129	22%	22%
<b>Total</b>	<b>1,061</b>	<b>3,696.82</b>	<b>1,694</b>	<b>141</b>	<b>596.03</b>	<b>235</b>	<b>16%</b>	<b>13%</b>

### C. Incorporation of Environmental Requirements into the Project Contractual Arrangements

6. The environmental requirements that needs to be incorporated on each of the civil works contract are the environment code of practice (ECOP) checklist, general environmental management plan (EMP), and road-specific EMP<sup>2</sup>. RCIP Project 2 has incorporated these safeguards requirements in all civil works contract<sup>3</sup>. The quality of the ECOP Checklist preparation and their accuracy were established during the Project 1 monitoring.

<sup>2</sup> Item v. para 16 environmental assessment and review framework (EARF) <http://www.adb.org/sites/default/files/linked-documents/40423-013-ind-earfab.pdf>

<sup>3</sup> Based on review of sample DPRs, site visits, ADB Mission back-to-office reports, and Meetings with the PICs.

**D. RCIP-Environmental Assessment and Review Framework**

7. Owing to the huge number of similar short roads, averaging 3.74 kilometers for Project 2, RCIP follows a two-track environmental assessment. The first track involves completion of detailed transect walks and ECOP checklists for each and every road by the PIC. The second track involves review of a representative sample roads of at least 10% of the roads by the Technical Support Consultants (TSC) for each state. Based on the findings and recommendations from field review and ECOP checklists for the 10% sample roads state-level Rapid Environmental Assessment (REA) checklists for ADB environmental categorization and state level IEE’s were prepared by the TSC. The IEE covered key findings and recommendations on environmental categorization, environmental baseline, statutory compliance, mitigation measures, climate change vulnerability, grievance and redress, consultations, institutional arrangement and capacity building. The state-level IEE reports were prepared consistent with the ADB SPS 2009. These IEE Reports contain the general EMPs.

8. SATC, during its review missions, conducted field checks and desk reviews of road ECOP Checklist and EMP to ensure accuracy, comprehensiveness, and inclusion in all DPRs and bidding documents<sup>4</sup>.

9. All 5 IEE reports for Assam, Chhattisgarh, Madhya Pradesh, Odisha, and West Bengal are disclosed in the ADB, NRRDA, and state RRDA respective websites. ECOP Checklist and road specific environmental management plans are compiled in the jurisdictional PIU and SRRDA headquarters which are available to anyone upon request.

**E. Overview of Institutional Framework for Environmental Management**

10. The institutional framework designed and implemented in RCIP ensures the necessary safeguards roles and responsibilities are carried out at appropriate administrative levels. The succeeding Table provides a summary while Figure I is organizational chart.

**Table 3: Environmental Management Institutional Framework**

Level	Actor	Key Responsibilities
National	National Rural Road Development Agency (NRRDA)	(i) Ensure that the each SRRDAs have Environmental Officers; (ii) Ensure that the SRRDAs meet all environmental assessment requirements; (iii) Undertake random monitoring of the implementation of the EMP;
State	SRRDA	(i) Ensure that DPRs include the completed ECOP checklists; and DPRs for non-road subprojects will include environmental management plans ; (ii) Ensure that the ECOP checklists and IEE reports are reviewed by the environmental officer of the concerned SRRDA; (iii) Ensure all required statutory environmental clearances are obtained and conditions implemented; (iv) Ensure that the road specific EMPs and respective budget are included in the bidding documents; (v) Ensure that the ECOP checklists and EMP (including general and site specific issues) are made available to

<sup>4</sup> For RCIP Tranche I retroactive financing, procurement was accomplished through the use of standard bidding document (SBD). Although the bidding document did not specifically refer to the IEE, it contained road specific EMP reckoned from the general EMP used in RRS.

Level	Actor	Key Responsibilities
		the contractors; (vi) Undertake routine monitoring of the implementation of the EMP and prepare monitoring reports at least once a year; and
Road	PIU	(i) Complete the ECOP checklists for roads, bridges, RRNMU and RCTRC and prepare general and road specific EMPs (including monitoring plan) (ii) Prepare in house or through the DPR consultant EMPs for each non-road subproject (iii) Obtain necessary statutory environmental clearance prior to commencement of civil works (v) Through the project implementation consultants, conduct monitoring of all subprojects and prepare pre-, during and post-construction monitoring checklists.
	Contractor	(i) implement the EMP as provided in the civil works contract (ii) provide regular monitoring reports to PIC and PIU (iii) secure necessary permits for hot-mix plants, quarrying and crushers, batch mixing plants, discharge of sewage from construction camps requires No Objection Certificate (Consent to Establish and Consent to Operate) from State Pollution Control Board prior to establishment, and Permission from Central Ground Water Authority is required for extracting ground water for construction purposes, from areas declared as critical or semi critical from ground water potential prospective by them.

## II. Compliance on Environment Safeguards Requirements

### A. Compliance Environmental Provisions of the Loan Covenant

11. Generally all states are complying with the requirements of the loan covenants. However, delays with mobilization of the new PIC under West Bengal SRRDA has created a gap in the monitoring activities for West Bengal under Project I. Due to this some environmental provisions of the loan covenants with the ADB is shown as “partially complied” as detailed in the succeeding Table.

**Table 4: Status of Compliance to Loan Covenant, RCIP Project 2 (Loan 3065) as of May 2015**

Loan Covenant Item	Description	Status of Compliance
Item 2. Execution and Implementation Arrangements. Execution of Project and Operation Of Project Facilities; Financial Matters. Schedule 5	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 ... environmental safeguards implementation... 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.	<b>Partially Complied.</b> At the national-level the TSC performed environmental safeguards through the Environmental Experts. A new TSC was contracted and in the interim individual specialist on social, environmental, and engineering were hired in the interim period of 30 June 2014-15 January 2015. , At the state-level, all SRRDA focus safeguard persons have been appointed. Further, all 4 of 5 State

Loan Covenant Item	Description	Status of Compliance
		PICs services for Tranche 2 were unbroken as existing contracts were re-instated with the exception of West Bengal RRDAs.
Item 4. Execution and Implementation Arrangements. Execution of Project and Operation Of Project Facilities; Financial Matters. Schedule 5	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 to ... (b) to mitigate unforeseen environmental... impacts.	<b>Complied.</b> State Environmental Officers are appointed. Funding for PICs are adequate and available in all RCIP States. To date, no unanticipated impacts were encountered.
Item 5. Execution and Implementation Arrangements. Execution of Project and Operation Of Project Facilities; Financial Matters. Schedule 5	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 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.	<b>Partially Complied.</b> 4 of 5 States were able to continuously sustain the services of the PIC except West Bengal.
Item 20. Environment. Execution of Project and Operation Of Project Facilities; Financial Matters Schedule 5	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 (a) all 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 relevant IEE and EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	<b>Complying.</b> All relevant clearances and permits like tree cutting, no objection clearance (NOC) for hot mix plants (HMPs), and pollution under control (PUCs) certificates were either secured or have been file and awaiting approval. Non-compliances to the EMP were noted and corrective actions are being implemented by the contractor and supervised by the PIC.
Item 21. Environment. Execution of Project and Operation Of Project Facilities; Financial Matters Schedule 5	Only those Subprojects that meet the eligibility requirements set out in Subproject selection criteria and procedures included in Schedule 4 to the FFA, and which adhere to the relevant requirements of the PMGSY Guidelines, the 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.	<b>Complied.</b> All nominated projects under Tranche 1 complied with the EARF, and ECOP and IEE state-level IEEs were prepared.
Item 22. Environment. Execution of Project and Operation Of Project Facilities; Financial Matters Schedule 5	Each State shall require the respective IA to ensure that the preparation, design, construction, implementation, operation and decommissioning of each Subproject comply with (a) all 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 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 area 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 ECOP checklists for each and every road and bridges longer than 50 meters, based on which Subproject specific EMPs and the IEEs shall be prepared.	<b>Complied.</b> All DPRs which defines the technical requirement of the civil works contract have ECOP and EMPs. ECOP and EMP, in general, preparation complied with the EARF. No construction was allowed inside forestland without prior forest clearance. No road subproject is located inside or near wildlife sanctuaries, national parks, and similar areas with high significant ecological functions. ECOP Checklist are prepared for all roads. To date, no bridge longer than 50 meters have been encountered.
Bidding Documents and Execution of Civil Works Contracts, Item 32, Schedule 5	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: (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; (b) make available a budget for all such environmental and social measures; (c) provide the Project Executing Agency with a written notice of any unanticipated environmental, social impacts that arise	<b>Complied.</b> All bidding documents contain the road-specific EMPs.



Loan Covenant Item	Description	Status of Compliance
	during construction, implementation or operation of the Project that were not considered in the IEEs, ECOPs, EMPs, and CPFs; (d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and (e) fully reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.	
Bidding Documents and Execution of Civil Works Contracts, Item 33, Schedule 5	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. (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). (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 (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.	<b>Complied.</b> All bid documents contain the standard and road specific EMPs prepared by the PIC. No unanticipated impacts have been encountered to date. EMP non-compliances detected during the periodic environmental monitoring for each road have been communicated to the contractors.
Item 35. Safeguards Monitoring. Monitoring and Reporting. Execution of Project and Operation Of Project Facilities; Financial Matters. Schedule 5	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:... (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). (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 (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.	<b>Complied.</b>
Item 46. Monitoring and Reporting. Execution of Project and Operation Of Project Facilities; Financial Matters. Schedule 5	Without limiting the generality of Section 2.08(c) of the Project Agreements and Section 7.04(d) 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 to Project, as may be requested by ADB.	<b>Not applicable to date.</b>

## B. Compliance to Statutory Requirements

12. High degree of compliance to the domestic environmental laws and regulations were observed across the RCIP states. The road subprojects implemented in RCIP Project 2 did not have any road passing through any national parks, sanctuary or other Government designated protected areas, and therefore, there was no road that requires any environmental clearance from the MOEF.

13. In most of the cases Contractors resorted in sourcing ready mix asphalt instead of establishing hot mix plants and therefore the "Non Objection Certificate" (NOC) from the State Pollution Board is not required. In cases where the contractor needs to establish a hot mix plant, clearances were secured albeit with some delays in filing application and issuance of NOC were recorded. Similarly, the ready crushed rock has been supplied from existing licensed quarries,

and if small size rock needed, it has been done manually; therefore, the no-objection certificate from State Pollution Control Board was also not required. Vehicles engaged in the construction works had the “Pollution Under Control” (PUC) certificate as stipulated in the Environment Management Plan.

14. Due to the nature of PMGSY being short roads and the bias towards manual labor in the construction methodology, there was no need to establish camp and instead Contractors rented existing residential structures. This avoided a number of mitigation measures related to camp site siting and local permissions. The water for construction works has been obtained from various sources as per site conditions e.g. obtained from rivers/streams, private pond or using the existing tube well with the permission from the owners.

### C. Compliance to the Environmental Assessment and Review Framework

15. The requirements stipulated in the EARF have been or are being complied with. Table below shows the substantial compliance of various conditions of the EARF.

**Table 4: Compliance of RCIP-Project 2 to the EARF**

EARF Reference	Requirements	Compliance Status
Section D, Para 2	i) No Category A (as per ADB’s SPS) subproject will be included in the MFF.	<b>Complied.</b> No ‘Category A’ subproject has been included in the Project 2.
	ii) ECoP checklists with annexes on trees, utility structures, community structures, strip plans and photographs will be completed for each and every road.	<b>Complied.</b> ECoP checklists with all the annexes on trees, utility structures, community structures, strip plans and photographs have been prepared for all subprojects.
	iii) Based on the requirements of the PMGSY guidelines separate ECOP checklists as given in Appendix 2 will be completed for bridges that are longer than 50 m.	<b>Not applicable to date.</b> No long span bridge was included in the Project 2.
	iv) Based on the completed ECOP checklists for roads and bridges, IEE reports will be prepared at a state level. These reports must contain a general EMP and a site specific EMP where there are site specific issues.	<b>Complied.</b> IEEs including EMPs were prepared for all subprojects included in Project 2.
	v) ADB’s REA checklist for roads and highways will be completed based on the state level IEE reports prepared and submitted to ADB to confirm categorization.	<b>Complied.</b> REA checklists were prepared for all subprojects.
Section E, Para 11	i) Subprojects will be eligible for construction or upgrading in accordance with the PMGSY guidelines, and be included in the respective district core network	<b>Complied.</b> All Project 2 and subprojects were selected from district core network.
	ii) The subprojects shall not disturb any cultural heritage designated by the Government or by international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance.	<b>Complied.</b> None of the Project 2 subproject passes through cultural heritage site designated by the Government or international agencies, such as UNESCO etc.
	iii) The subproject will not pass through any designated wildlife sanctuaries, national parks, other sanctuaries, notified ecological sensitive areas or area of international significance (e.g., protected wetland designated by the Wetland Convention);	<b>Complied.</b> None of the Project 2 subprojects located in any wildlife or ecological sensitive areas.
	iv) The projects shall only involve activities that follow Government of India laws and regulations, ADB’s Safeguard Policy Statement (2009), this EARF and respective subproject EMPs.	<b>Complied.</b> Project 2 subprojects involve activities that follow laws and regulations of Gol and ADB’s Safeguard Policy Statement (2009).

### D. Compliance to the Environmental Management and Monitoring Plans

## 1. Environmental Monitoring Plan

16. Environmental monitoring requirement for PMGSY roads is rudimentary comprising mainly of ensuring whether a particular mitigation measure was accomplished and not requiring complex and expensive media-based (air, water, and waste) environmentally quality monitoring. All contractors are required to submit monthly monitoring reports while PIC conduct on-site inspection at least 3 times<sup>5</sup> during the entire process of road development, namely: pre-, during-, and post-construction stages. The TSC and SRRDA Environmental Officer are required to conduct at least one annual site inspection in line with the preparation of this report. Table 6 presents the status of environmental monitoring for each state.

17. RCIP Project 2, with the exception of West Bengal, has subjected all 930 roads to “pre-construction” monitoring, and 89% to “during-construction: monitoring demonstrating wide coverage of the activity and compliance to the EARF and EMP.

**Table 6: RCIP - Tranche 2 as of April 2015 (total figures only)**

STATE	No. of roads (total length)	No. of ECOP checklists completed (total length)	No. of road specific EMP's Prepared* (% of total)	No. of Road with Pre-construction monitoring checklists completed (% of total)	No. of Roads with during construction monitoring checklist completed (% of total)
1. Assam	202(499.57)	202(495.57)	202(100)	202(100%)	30 (15%)
2. Chhattisgarh	132 (429.06)	132 (429.06)	132 (100%)	132 (100%)	132 (100%)
3. Madhya Pradesh	254/654.04	254/654	254 (100%)	254/654	254/ (100%)
4. Odisha	343/ 1184.06	343/ 1,184	343/ (100%)	343/ (100%)	47(14%)
5. West Bengal	130 (930.09)	130/930.09	130 (100%)	No data available	No data available
Total	1061(3696.82)	1061(3692.82)	1061 (100%)	931 (88%)	876 (43.6%)

## 2. Environmental Management Plan Implementation

18. To assess the performance of each SRRDA in implementing the EMP, a total of 48 monitoring reports were reviewed (see succeeding Table). A sample of the environmental monitoring checklist is provided in appendix 1. Overall compliance rate for RCIP Project 2 is good at 83%. Substantial compliance were achieved across all State with regards to the EMP implementation particularly on the design requirements addressing hydrology and drainage<sup>6</sup>, cut and fill and embankment construction<sup>7</sup>, and finalization of alignment which avoided numerous environmental impacts.

19. The environmental requirements related to camp management and need to preserve top soil were avoided by majority of the contractors in Chhattisgarh and Madhya Pradesh by avoiding the establishment of camps and the non-utilization of agricultural areas as source of borrow materials. Contractors have opted to rent existing rural structures rather than establishing camp site due to reliance to local communities in providing labor and the preference to use manual labor in the road construction. The difficulty of getting permission from farmers to provide borrow materials has increased the haul distance but avoided the complex requirements of preserving and storing top soil and properly closing borrow area to the satisfaction of the land owner.

<sup>5</sup> For Chhattisgarh and Madhya Pradesh, the PIC conduct 2 post monitoring inspections.

<sup>6</sup> Provision of adequate drainage structures, water quality protection, minimum disturbance to natural drainage, and pavement selection on waterlogged areas.

<sup>7</sup> Minimize excessive cuts and fills, minimize borrow, and embankment height referenced to high flood level.

20. The contractor, in general, also preferred the use of ready-made asphalt as opposed to establishing hot mix plants and avoided the required environmental management measures stipulated in their civil works contracts.

21. However, almost all contractors has dismal performance in occupational health and safety and the provision of necessary personal protective equipment (PPE) to laborers. There was mis-understanding between the contractor and the PIUs and PICs in interpreting the mitigation measures on construction debris and wastes. As required in the EMP, the right-of-way (RoW) including the drainage structures and particularly the carriageway should be free from excavated materials, unusable debris, and bituminous waste at any given time during the project construction. Instead, the PICs and PIUs impose this as a post-construction requirement which could pose hazard to road-users during construction stage.

22. A welcomed innovation in rural road construction is the use of waste plastic in Madhya Pradesh. Shredded waste plastic is mixed with aggregates in the hot mix plant to replace 10% of the original bitumen requirement resulting to cost savings. Test results showed that by replacing 10% of the bitumen with waste plastic improves asphalt workability, reduces waste absorption from 10-15%, and an improvement in aggregate impact value ranging from 10-12%. Madhya Pradesh to date has constructed 35 km of roads in 17 districts under PMGSY and is planning to construct another 1000 km long stretch in the coming years.

23. Compliance to EMP was very good during the pre-construction stage at 89%, however as the construction progress non-compliances related to occupational health and safety, traffic diversion, dust suppression, and debris management posed difficulties to the contractors resulting to an overall of compliance rate of 71%. Corrective actions are currently being undertake to address these issues as post-construction performance is dismal at 71%.

**Table 7. Distribution of Pre-, During-, and Post- Construction Monitoring Reports Reviewed to Assess Compliance to EMP.**

State	Number of EMP Monitoring Reports Reviewed			
	Pre-Construction	During-Construction	Post-Construction	Total
Assam	5	5	0	10
Odisha	2	0	0	2
Madhya Pradesh	10	10	1	21
Chhattisgarh	10	5	0	15
West Bengal	Not available	Not available	Not Available	
Total	27	20	1	48

**Table 8. EMP Compliance Performance to EMP of RCIP Project 2**

State	Average Compliance Rate				Areas of non-compliances
	Pre-Const'n.	During-Const'n.	Post-Const'n.	Weighted average	
Assam	79%	69%	ND	74	Borrow area management, topsoil preservation, oil handling, debris, occupational health and safety (OHS), clearing of vegetation, shifting utilities, personal protective equipment (PPE), haul truck cover
Odisha	100%	ND	ND	100%	None
Madhya Pradesh	96%	79%	100%	80%	Debris management, HMP clearance, groundwater use permission, OHS, PPE
Chhattisgarh	82%	66%	ND	77%	PPE, traffic management, debris, hot mix plant clearance, OHS, PPE
West Bengal	No data available	No data available	No data available	No data available	
Average	89%	71%	71%	83%	

### **III. Public Consultations and Grievance Redress**

24. The PMGSY employs a bottom-up approach for project planning and preparation. The Core Network, from which the roads to be improved are selected, is prepared at the block level in consultation with the concerned Panchayats and consolidated at the district level. The list of roads to be taken up in each yearly allocation is first prepared by the PIU, approved by the Zilla Parishad, and then forwarded to the state government for further approval. Thus, the subsequent consultations carried out by the PIU personnel for all the selected sub projects faced no objection from the community and there was active participation during the conduct of the transect walks and preparation of the environmental mitigation plans.

### **IV. Conclusion**

25. It can be concluded that based on the foregoing review of environmental safeguards documents particularly the state IEE reports, ECOP Checklists, road specific EMPs, and monitoring reports at various stages of road construction and validated through site-inspection that RCIP Project 2 has achieved substantial compliance to the environmental provisions of the loan covenant, EARF, domestic statutory requirements, and the EMP. Further, no significant adverse environmental impacts have occurred in the process of implementing the project.

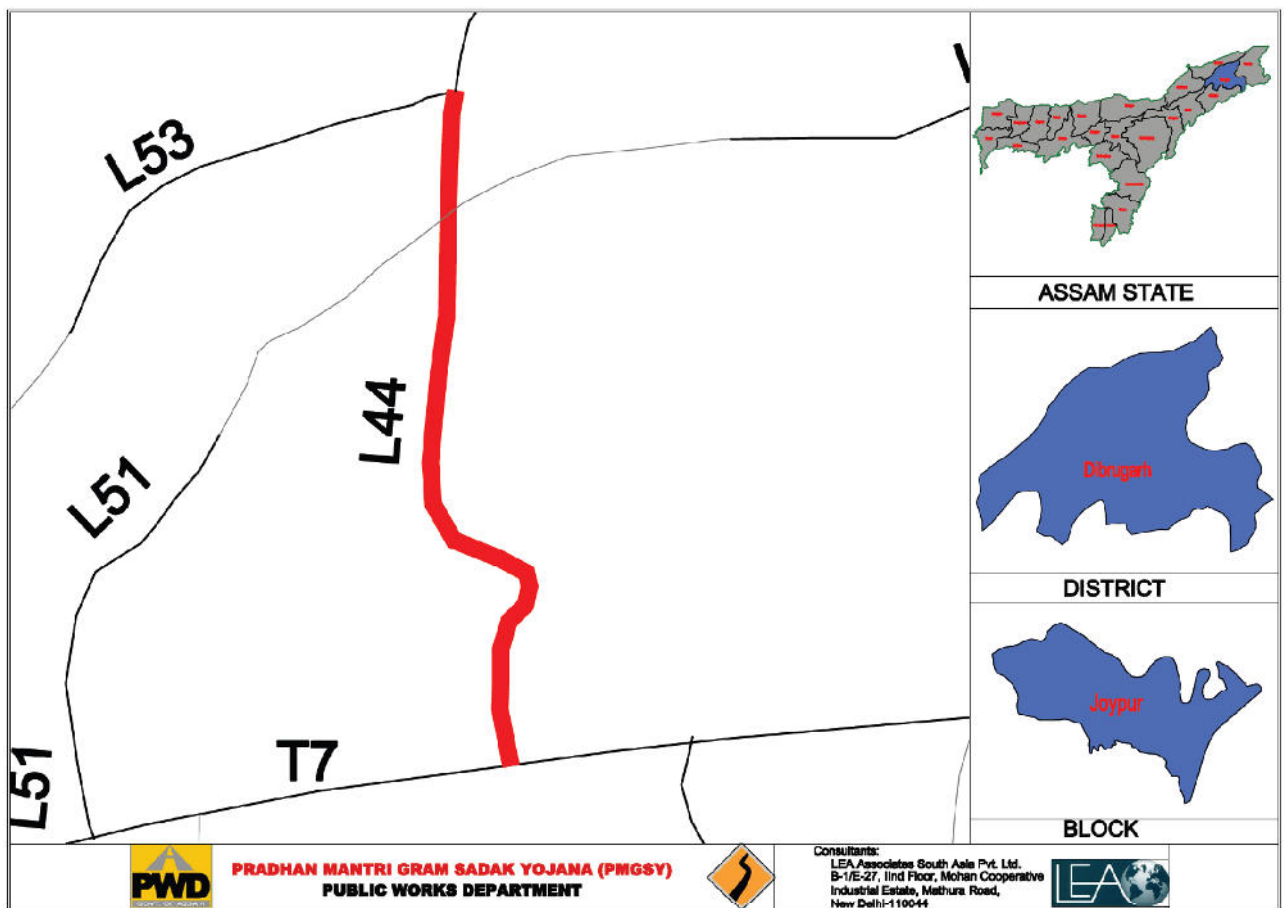
26. The TSC confirmed the strict implementation of the environmental screening of the EARF and both sample and non-sample roads stay under the environment category B.

27. There is a need to strengthen the linkage between environmental monitoring and enforcement across the RCIP States. Currently, the PICs and PIUs were able demonstrate their ability to detect non-compliance by the contractor. However, their capability to compel contractors to rectify and implement corrective measures immediately to minimize impact to the environment remains to be seen. The TSC with guidance from ADB will conduct consultations with the RCIP States to address this weakness by discussing the range of administrative and if warranted criminal sanctions to deter violations.

# ENVIRONMENTAL MONITORING DURING DESIGN AND PRE-CONSTRUCTION STAGE

## 1. Monitored Road: CHENGELIPATHER GAON TO GETUPATHER ROAD

<b>Monitoring Responsibility</b>	: PIU with Support from PIC
<b>Monitoring Frequency</b>	: Once during pre- construction stage
<b>Road Stretch Name</b>	: Chengelipather Gaon to Getupather Road
<b>Length</b>	: 4.350 km
<b>Block</b>	: Jypur
<b>District Name</b>	: Dibrugarh



Core Road Network of Jypur

Sl. No.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
1..	Climate Change Consideration and Vulnerability screening	<ul style="list-style-type: none"> <li>o Compliance to climate change vulnerability check point given under EARF and adoption of necessary mitigative measures as may be required</li> <li>o Efforts shall be made to plant additional trees for increasing the carbon sink. The tree may be planted with help of PRI (Panchayati Raj Institution)</li> </ul>	All through the alignment of each rural road	Not Complied	Co- ordinate with Gram Panchayat for plantation of trees alongside the road.
2..	Finalization of alignment	<ul style="list-style-type: none"> <li>o The road will be part of district core network and will comply with PMGSY guidelines</li> <li>o Subproject shall not disturb any cultural heritage designated by the government or by the international agencies, such as UNESCO, and shall avoid any monuments of cultural or historical importance.</li> <li>o Subproject will not pass through any designated wild life sanctuaries, national park, notified Eco sensitive areas or area of international significance such as protective wet land designated under Wetland Convention, and reserve forest area..</li> <li>o Subproject to comply with local and National legislative requirements such as forest clearance for diversion of forestland and ADB's Safeguard Policy Statement 2009.</li> <li>o Alignment finalization considering availability of right of way and in consultation with local people.</li> <li>o ROW may be reduced in built up area or constricted areas to minimize land acquisition as per PMGSY Guidelines.</li> <li>o Adjust alignment to the extent feasible to avoid tree cutting, shifting of utilities or community</li> </ul>	All through the alignment	Complied	
			All through the alignment	Complied	
			All through the alignment	Complied	
			All through the alignment	Complied. There will be no diversion of any forest land.	
			All through the alignment	Complied	
			All through the alignment	Complied. Adequate ROW is available. No land acquisition involved.	
			All through the alignment	Complied.	

Sl. No.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
		structure.		A total of 15 trees and 52 EPs will be affected due to the project.	
		<ul style="list-style-type: none"> <li>o The road shall follow natural topography to avoid excessive cut and fill.</li> </ul>	All through the alignment	Complied	
3.	Land acquisition	<ul style="list-style-type: none"> <li>o Land acquisition, compensation packages, resettlement and rehabilitation, poverty alleviation programs for affected people and all other related issues are addressed through Social Impacts and Resettlement &amp; Rehabilitation report.</li> </ul>	No land acquisition	Not Applicable	
4.	Clearing of vegetation and removing trees	<ul style="list-style-type: none"> <li>o All efforts shall be taken to avoid tree cutting wherever possible.</li> <li>o Requisite permission from forest department shall be obtained for cutting of roadside trees.</li> <li>o Provision of Compensatory Afforestation shall be made on 1:3.ratio basis (1:6 for Assam state).</li> <li>o Permission shall be taken for diversion of any forest land if involved. Provision shall be made for additional compensatory tree plantation.</li> <li>o The vegetative cover shall be removed and disposed in consultation with community.</li> </ul>	<p>No forest land is alienated.</p> <p>15 numbers of trees would be affected.</p>	Not complied.	
5.	Shifting of utilities and common property resources	<ul style="list-style-type: none"> <li>o The road land width shall be clearly demarcated on the ground.</li> <li>o All efforts will be made to minimize shifting of utilities and common property resources</li> <li>o Utility and community structure shifting shall be planned in consultations and concurrence of the community</li> <li>o Required permissions and necessary actions will be taken on a timely basis for removing and shifting utility structures and common property resources before road construction activities begin.</li> </ul>	A total of 52 Electric Poles need to be shifted.	Not complied	
6.	Design and planning of embankment construction	<ul style="list-style-type: none"> <li>o The alignment design shall consider options to minimize excessive cuts and fills.</li> <li>o The cut off material shall be planned to be used</li> </ul>	<p>All through the alignment</p> <p>No flood prone areas</p>	Complied	



Sl. No.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
		<p>for embankment to minimize borrow earth requirement.</p> <ul style="list-style-type: none"> <li>o The design shall be as per relevant IRC provisions for cut and fill, slope protection and drainage.</li> <li>o The top soil of the cut and fill area shall be used for embankment slope protection</li> </ul> <p>Embankment will be designed above High Flood Level (HFL) in flood prone areas where feasible.</p>			
7.	Hydrology and Drainage	<ul style="list-style-type: none"> <li>o Provision of adequate cross drainage structure shall be made to ensure smooth passage of water and maintaining natural drainage pattern of the area.</li> <li>o The discharge capacity of the CD structure shall be designed accordingly.</li> <li>o Provision of adequate drainage structures shall be made in water stagnant/ logging areas.</li> <li>o The construction work near water body shall be planned preferably in dry season so that water quality of the water channel is not affected due to siltation and rain water runoff.</li> <li>o Provision of additional cross drainage structure shall be made in the areas where nearby land is sloping towards road alignment on both the sides.</li> <li>o Provision of concrete road construction in habitat area with drainage of both side of the road shall be made as per the design provision and with adequate slope to prevent any water logging.</li> </ul>	<p>Near all drainage crossings, nalas, rivers, streams and ponds.</p> <p>Culverts location: 1+455,1+867 2+020,1+800 2+327,3+555</p>	Complied	
8.	Establishment of Construction Camp, temporary office and storage area	<ul style="list-style-type: none"> <li>o Construction camp sites shall be located away from any local human settlements and forested areas (minimum 0.5 km away) and preferably located on lands, which are not productive (barren/ waste lands presently).</li> </ul>	For all roads	Not applicable. Construction camp yet to establish.	
<ul style="list-style-type: none"> <li>o Similarly temporary office and storage areas shall be located away from human settlement areas and forested areas (minimum 0.5 km).</li> </ul>		For all roads	Not applicable. Temporary office yet		

Sl. No.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
				to establish.	
		<ul style="list-style-type: none"> <li>o The construction camps, office and storage areas shall have provision of adequate water supply, sanitation and all requisite infrastructure facilities.</li> </ul>	For all roads	Not applicable at this stage	
		<ul style="list-style-type: none"> <li>o The construction camps, office and storage areas shall have provision of septic tank/ soak pit of adequate capacity so that it can function properly for the entire duration of its use.</li> </ul>	For all roads	Not applicable at this stage	
		<ul style="list-style-type: none"> <li>o All construction camps shall have provision of rationing facilities particularly for kerosene/ LPG so that dependence on firewood for cooking is avoided to the extent possible.</li> </ul>		Not applicable at this stage	
		<ul style="list-style-type: none"> <li>o The construction camps, office and storage areas shall have provision of health care facilities for adults, pregnant women and children.</li> </ul>		Not applicable at this stage	
		<ul style="list-style-type: none"> <li>o Personal Protective Equipments (PPEs) like helmet, boots, earplugs for workers, first aid and fire fighting equipments shall be available at construction sites before start of construction. An emergency plan shall be prepared to fight with any emergency like fire.</li> </ul>		Not applicable at this stage	
		<ul style="list-style-type: none"> <li>o Provision shall be made for domestic solid waste disposal in a controlled manner. The recyclable waste shall be sold off and non- saleable and biodegradable waste shall be disposed through secured land filling.</li> </ul>	For all roads	Not applicable at this stage	
		<ul style="list-style-type: none"> <li>o Provision of paved area for unloading and storage of fuel oil, lubricant oil, away from storm water drainage.</li> </ul>	For all roads	Not applicable at this stage	
9.	Traffic Management and Road Safety	<ul style="list-style-type: none"> <li>o Identify the areas where temporary traffic diversion may be required.</li> <li>o Prepare appropriate traffic movement plan</li> </ul>	As proposed under DPR and determined by contractor and approved	Complied	

Sl. No.	Environmental Attributes	Mitigation Measures	Location	Compliance status (Complied, partly complied, not complied)	Corrective action proposed if any
		<p>approved by respective PIU for ensuring continued safe flow of traffic, pedestrians and all road users during construction.</p> <ul style="list-style-type: none"> <li>o Wherever, cross drainage structure work require longer construction time and road is to be blocked for longer duration, the PIU/ DPR consultant shall define appropriate measures for traffic diversion before the start of the construction.</li> <li>o Adequate signboards shall be placed much ahead of diversion site to caution the road users. The road signs should be bold and retro reflective in nature for good visibility both during the day and night.</li> <li>o It is proposed for the respective PIU to discuss with the railways division/ department for providing adequate safety measures at unmanned railway crossing where applicable. Adequate clearly visible sign shall be provided on both sides of the railway crossing All measures for traffic control and safety in accordance with IRC codes:99- 1988 will be followed</li> </ul>	<p>by PIC/ PIU/ Locations requiring traffic diversions:</p> <p>1+ 405 – 1+ 505 1+ 817 – 1+ 917 1+ 970 – 2+ 070 1+ 750 – 1+ 850 2+ 277 – 2+ 377 3+ 505 – 3+ 605</p>		
10.	Grievance Redress	<ul style="list-style-type: none"> <li>o Maintaining records of all environment related grievances raised, if any, and the actions taken to address them through the village level grievance redress committee (GRC) and PIU as applicable</li> </ul>	All project roads.	Complied. GRC is in place. No issues raised by the community so far.	



**Existing Condition of the Road**



**Electric poles alongside the corridor**