Public Disclosure Authorized

Public Disclosure Authorized

Document of

The World Bank

FOR OFFICIAL USE ONLY

Report No: PAD2683

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT PAPER

ON A

PROPOSED ADDITIONAL LOAN

IN THE AMOUNT OF

US$500 MILLION

TO THE

REPUBLIC OF INDIA

FOR

PMGSY RURAL ROADS PROJECT

May 4, 2018

Transport and Digital Development Global Practice
South Asia Region

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

CURRENCY EQUIVALENTS

(Exchange Rate Effective {April 23, 2018})

Currency Unit =	Indian Rupees (INR)
INR 66.2177 =	US$1

FISCAL YEAR
April 1 - March 31

Regional Vice President:	Ethel Sennhauser
Country Director:	Junaid Kamal Ahmad
Senior Global Practice Director:	Jose Luis Irigoyen
Practice Manager:	Karla Gonzalez Carvajal
Task Team Leader(s):	Ashok Kumar, Reenu Aneja

ABBREVIATIONS AND ACRONYMS

AMP	Asset Management Plan
DFAT	Department of Foreign Affairs and Trade
DLI	Disbursement Linked Indicator
DPR	Detailed Project Report
ECOP	Environmental Code of Practice
EEP	Eligible Expenditure Program
ESMF	Environmental and Social Management Framework
FM	Financial Management
GePNIC	Government eProcurement Solution of NIC
GHG	Greenhouse Gas
GIS	Geographic Information System
GOI	Government of India
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
IA	Implementing Agency
IAHE	Indian Academy of Highway Engineers
ICT	Information and Communication Technology
IP	Implementation Progress
IRC	Indian Roads Congress
ISR	Implementation Status and Results Report
IT	Information Technology
LWE	Left Wing Extremism
MORD	Ministry of Rural Development
NQM	National Quality Monitor
NRRDA	National Rural Roads Development Agency
OCDS	Open Contracting Data Standard
OMMAS	On-line Management, Monitoring, and Accounting System
PAD	Project Appraisal Document
PAP	Project-Affected Person
PCI	Pavement Condition Index
PCMM	Procurement and Contract Management Manual
PDO	Project Development Objective
PIU	Project implementation Unit
PMC	Project Management Consultant
PMGSY	Pradhan Mantri Gram Sadak Yojana
PPSD	Project Procurement Strategy for Development
PRAMS	Procurement Risk Assessment Management System
PSU	Public Sector Undertaking
PTA	Principal Technical Agency
QCBS	Quality- and Cost-Based Selection
SHG	Self-Help Group
SMF	Social Management Framework
SQM	State Quality Monitor
SRRDA	State Rural Roads Development Agency
VF	Vulnerability Framework

BASIC INFORMATION – PARENT (PMGSY Rural Roads Project - P124639)

Country	Product Line	Team Leader(s)		
India	IBRD/IDA	Ashok Kumar		
Project ID	**Financing Instrument**	**Resp CC**	**Req CC**	**Practice Area (Lead)**
P124639	Investment Project Financing	GTD06 (9384)	SACIN (347)	Transport & Digital Development

Implementing Agency: National Rural Road Development Agency

Is this a regionally tagged project?
No

Bank/IFC Collaboration
No

Approval Date	Closing Date		Original Environmental Assessment Category	Current EA Category
20-Dec-2010	30-Jun-2018		Full Assessment (A)	Full Assessment (A)

[ ] Situations of Urgent Need or Capacity Constraints	[ ] Financial Intermediaries (FI)
[ ] Series of Projects (SOP)	[ ] Project-Based Guarantees

Development Objective(s)

The objective is to strengthen the systems and processes of the national PMGSY rural roads program for the expansion and maintenance of all-season rural accessroads. The result will enhance the road connectivity to economic opportunities and social services for beneficiary communities in the participating states.

Ratings (from Parent ISR)

	Implementation

	24-Jun-2015	22-Feb-2016	15-Sep-2016	18-Apr-2017	06-Sep-2017
Progress towards achievement of PDO	S	S	S	S	HS
Overall Implementation Progress (IP)	S	S	S	S	S
Overall Safeguards Rating	MS	MS	MS	MS	S
Overall Risk	M	M	M	M	M

BASIC INFORMATION – ADDITIONAL FINANCING (Additional Financing for PMGSY Rural Roads Project - P165402)

Project ID	Project Name	Additional Financing Type	Urgent Need or Capacity Constraints
P165402	Additional Financing for PMGSY Rural Roads Project	Cost Overrun, Scale Up	No
Financing instrument	Product line	Approval Date	
Investment Project Financing	IBRD/IDA	25-May-2018	
Projected Date of Full Disbursement	Bank/IFC Collaboration		
15-Mar-2021	No		
Is this a regionally tagged project?			
No			

[ ] Situations of Urgent Need or Capacity Constraints	[ ] Financial Intermediaries (FI)
[ ] Series of Projects (SOP)	[ ] Project-Based Guarantees
[ ] Disbursement-linked Indicators (DLIs)	[ ] Contingent Emergency Response Component (CERC)
[ ] Alternative Procurement Arrangements (APA)	

Disbursement Summary (from Parent ISR)

Source of Funds	Net Commitments	Total Disbursed	Remaining Balance	Disbursed
IBRD	500.00	500.00		100 %
IDA	900.00	854.07		100 %
Grants				%

PROJECT FINANCING DATA – ADDITIONAL FINANCING (Additional Financing for PMGSY Rural Roads Project - P165402)

FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	1,000.00
Total Financing	1,000.00
of which IBRD/IDA	500.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	500.00

Non-World Bank Group Financing

Counterpart Funding	500.00
Borrowing Agency	500.00

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any other Policy waiver(s)?

[ ] Yes [✓] No

INSTITUTIONAL DATA

Practice Area (Lead)

Transport & Digital Development

Contributing Practice Areas

Climate Change
Environment & Natural Resources
Gender
Governance

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

Yes

b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment

Yes

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)

Yes

PROJECT TEAM

Bank Staff

Name	Role	Specialization	Unit
Ashok Kumar	Team Leader (ADM Responsible)		GTD06
Reenu Aneja	Team Leader		GTD06
Satyanarayan Panda	Procurement Specialist (ADM Responsible)		GGOPZ
Manvinder Mamak	Financial Management Specialist		GGOIS
Gopalaswamy Srihari	Social Safeguards Specialist		GSU06

Lakshmi Narayanan	Team Member		SACIN
Martin M. Serrano	Counsel	Legal	LEGES
Neha Pravash Kumar Mishra	Environmental Safeguards Specialist	Environment Management, Health and Safety	GEN06
Tema Alawari Kio-Michael	Team Member		GTD06
Venkata Rao Bayana	Social Safeguards Specialist	Core Consultant	GSU06
Victor Manuel Ordonez Conde	Team Member	Finance Officer	WFACS

Extended Team

Name	Title	Organization	Location
Arun Sharma	Consultant	The World Bank	
Boominathan Muthuthevar	Consultant - Economic Analysis		
D P Gupta	Consultant		
KiranGowda KS	Consultant		
KirtiBhushan Bansal	Consultant		
Rashi Grover	Consultant	The World Bank	
Vaideeswaran Sankaran	Consultant, Climate Change	World Bank	
VijayKumar Subrahmanyam	Consultant	The World Bank	

COUNTRY: INDIA
ADDITIONAL FINANCING FOR PMGSY RURAL ROADS PROJECT

Contents

I. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

A. Project's original objectives, design and scope.

1. In December 2000, the Ministry of Rural Development (MORD), Government of India (GOI) initiated a US$35 billion-plus flagship program, known as "*PMGSY: The Prime Minister's Rural Roads Program*"[1]. Its aim is to empower rural India by providing all-weather road access to all habitations[2] with population greater than 500 (250 in hill states, deserts, tribal, and backward districts). PMGSY[3] has been recognized amongst the top 50 achievements of India since independence. It has already delivered about 550,586 km of all-weather rural roads connecting 135,764 (out of a total 178,000 eligible) habitations, involving an investment of INR2,514 billion (US$38 billion). The program has a well-structured implementation framework including: a defined core network to prioritize project selection; standardized procedures for engineering design and contract execution; an e-procurement system; independent quality monitoring; five-year inbuilt maintenance in civil works contracts to create construction quality incentives and strengthen sustainability; a web-based 'On-line Management, Monitoring, and Accounting system' (OMMAS) and a comprehensive Operations Manual for implementation. PMGSY has been a game changer in the way rural roads are managed in India. Many states have started to use the PMGSY framework for their state-level rural road programs.

2. The World Bank (herein referred to as the 'the Bank') has supported PMGSY since its inception, through technical assistance and lending operations[4]. The Bank's current lending operation, known as the PMGSY Rural Roads Project (herein referred to as the 'Original Project') includes: (a) **PMGSY Program lending**, to finance civil works expenditures in eight participating states (Bihar, Himachal Pradesh, Jharkhand, Meghalaya, Punjab, Rajasthan, Uttar Pradesh, and Uttarakhand); and (b) **Institutional strengthening**, a technical assistance program designed to strengthen the capacity of relevant agencies to implement and enhance the program.

3. The Original Project has been a successful operation with a 'Highly Satisfactory' rating in achieving its project development objective (PDO) and significant accomplishments on civil works, institutional development, and disbursement linked indicators (DLIs). It is now fully disbursed and overcommitted[5] and is in compliance with all key loan covenants. The share of the rural population with access to all-season roads in the project participating states (***PDO indicator 1***) has increased to 90 percent compared to the end-project target of 72 percent (and a baseline of 67 percent)[6]. The proportion of the road network in good and fair

[1] The program was envisioned as part of the larger rural poverty-reduction strategy, and funded by the central government despite the subject of 'rural roads' being in the domain of the states.
[2] According to PMGSY Guidelines, a habitation is defined as a cluster of dwellings, in an area, the location of which does not change over time. Desam, Dhanis, Tolas, Majras, Hamlets and so on are commonly used terminology to describe the habitations.
[3] The program website is published at *http://www.pmgsy.nic.in/*.
[4] These include support to a national workshop to develop a national level rural road policy, policy framework for rural roads through a series of regional workshop, US$7.6 million Technical Assistance for Capacity Building of Rural Road Agencies, US$400 million Rural Roads Project, and technical assistance for Detailed Assessment of PMGSY, asset management plans, environmentally optimized design guidelines, and training framework for PMGSY (mostly supported through Trust Funds).
[5] Total commitments US$2,000 million against a Bank funding of US$ 1,375 million for civil works, About US$150 million from the additional Financing will be used to partially meet this funding gap.
[6] This share is for the population of eligible habitations under PMGSY.

condition (***PDO indicator 2 and DLI3***) has increased to 64 percent against the end-project target of 55 percent (and a baseline of 50 percent). In terms of physical outcome, about 26,000 km rural roads within the Original Project have already been built and opened to traffic, against a target of 22,520 km. In terms of institutional performance, even the low capacity states of Meghalaya, Uttarakhand, Jharkhand, and Bihar have demonstrated significant improvement in their performance compared to the pre-project level. (More details are provided hereunder).

4. The intended results for the Original Project were formulated as a series of **Disbursement Linked Indicators** (DLIs): the DLIs have been fully achieved and have been exceeded in some cases:

- ***DLI1: Extent of habitation connectivity achieved*:** The cumulative target was 39,331 habitations, (from a baseline of 27,600) but the achievement has been 50,420 habitations.
- ***DLI2: Effectiveness of public expenditure:*** The quality of engineering designs has significantly improved in all the participating states and so too the value for money through use of improved design tools, use of new technologies and local materials; five states have established their core network in the Geographical Information System (GIS) platform; the time lag between bid receipts and contract award has been contained within 45 days for more than 90 percent of the bids, even in low capacity states; more than 95 percent works attain satisfactory quality standards in all the participating states; and all the participating states are using OMMAS generating improvements in project approvals, contract management, and transparency in the delivery of PMGSY.

Box-I: Typical Benefits of Rural Roads in India

Government expenditure on roads has been found to have the largest impact on poverty reduction (163 persons lifted out of poverty with INR1 million investment) and a significant impact on productivity growth. Rural road connectivity promotes access to economic and social services, thereby generating increased agricultural productivity, non-agricultural employment and non-agricultural productivity which in turn result in expanding rural growth opportunities and higher income. Other impacts observed are doubling of farmers' incomes; reduction in freight charges by more than 60 percent, increase in literacy rate by 8 percent, increase in land prices by 80 percent, about 12 percent higher prices for agricultural produce, timely help during medical emergencies, particularly for pregnant women; and increased attendance of girls in school after the construction of roads and distribution of bicycles to them under a separate government program[7].

5. **Achievements of Bank engagement in PMGSY so far:** Leveraging its relatively small share in financing PMGSY nationwide, the Bank has used its involvement to promote and support many reforms and governance changes that have improved delivery of PMGSY in particular and management of the rural roads network in India more generally:

Policy effectiveness

(i) ***A national policy framework for rural roads:*** The framework highlighted the key sector issues that existed before PMGSY was launched: the need for sound investment criteria, better quality of engineering designs, and for better quality of construction; previous neglect of asset maintenance; and a weak policy and institutional framework. This framework helped shape the design of PMGSY.

[7] Studies undertaken under PMGSY and Bank sources.

(ii) ***Road Sector Modernization Plan for rural roads and Sustainable Development Goals (SDGs):*** With Bank support, National Rural Roads Development Agency (NRRDA)[8] prepared the plan for rural road agencies in various states and the role of rural roads in achieving SDGs which include targets that pertain to both low carbon[9] and climate resilience. MORD is preparing a vision for rural roads covering key issues, priority areas, and a road map for management of rural roads in India.

(iii) ***A national policy framework for rural road maintenance:*** This framework underpinned a growing attention to rural road maintenance: 22 states have established maintenance policies and started their implementation; 2 have adopted maintenance management systems; 14 have introduced performance based and/or community based maintenance contracts including those awarded to women self-help groups (SHGs) in 3 states; and substantial grants for rural road maintenance have been made to states by GOI (as per the recommendations of the 13th and 14th Finance Commissions).

Investment effectiveness

(iv) ***Investment prioritization:*** This identified India's core rural road network by defining optimal links from each habitation to nearby markets and settlements allowing systematic, rational and data-based investment decisions, and focusing PMGSY on a core rural road network of 1.1 million km out of a total of 4.6 million km of rural roads.

(v) ***Road safety performance:*** NRRDA is now integrating road safety engineering measures in the design of PMGSY roads. With Bank support, the Rural Works Department, Bihar, has developed a rural road safety action plan that will serve as a template for other states. A field guide has also been prepared to help retrofit road safety engineering measures and features to existing rural roads.

(vi) ***Asset management:*** Asset management system sustain the value of investments and an asset management framework for roads has been developed[10] and used by Assam and Bihar to prepare Asset Management Plans (AMPs), aimed at delivery of an efficient and good quality rural road network minimizing life-cycle cost.

Development impact

(vii) ***Mainstreaming social and environmental considerations in PMGSY:*** NRRDA has incorporated the Bank's Environment and Social Management Framework (ESMF) including health and safety provisions, in its Operations Manual and contract conditions.

(viii) ***Environmentally optimized road designs and new technologies:*** Guidelines for these advances have been prepared with the help of international experts from South Africa, Australia, USA, and India to utilize local and marginal materials in place of conventionally used hard stone. MORD's policy is now to construct at least 15 percent of PMGSY roads using new technologies and has built about 10,000 km roads using local materials and non-conventional technologies. This has resulted in significant carbon

[8] Recently renamed as National Rural Infrastructure Development Agency (NRIDA).

[9] Low carbon, in the context of rural roads, means both lower energy use in materials extraction and transport in construction phase and greater fuel efficiency during the operational phase.

[10] Once implemented, it will help India minimize about US$9 billion annually in losses in asset value and equal amount in high vehicle operating costs.

savings by reducing the long haulage involved with convention material in addition to solving the disposal problem associated with industrial by-products like quarry wastes and fly-ash. More importantly, the policy has ushered a sector shift towards a low carbon path[11]. The use of local and marginal material has also provided 25 percent savings in unit costs in addition to the environmental benefits.

(ix) ***Climate resilience and disaster risk management:*** The states of Bihar and Uttarakhand have initiated[12] preparation of climate change and disaster risk management strategies for rural roads with the World Bank support, demonstrating how climate change, green growth, and disaster risk can be integrated into the different stages of rural roads programming. The Bank is also supporting NRRDA in preparing best practice guidelines for design and construction of rural roads in hill areas which are frequently affected by climate-induced events (landslides) and other disasters (earthquakes).

Program management

(x) ***Improved delivery framework for PMGSY:*** This is now embedded in a comprehensive operations manual containing standard procedures for planning, project delivery, monitoring, funds flow, and institutional arrangements across all the states.

(xi) ***Improved procurement and contract management***: Many states have both reduced the duration of procurement while increasing its transparency by application of standardized procurement procedures, their codification in a procurement and contract management manual and adoption of e-procurement technology.

(xii) ***Use of information technology applications for improved program management and transparency:*** All the states now use OMMAS for monitoring and management of PMGSY: all information regarding release of funds, utilization of funds, status of progress of work and quality monitoring reports are in the public domain and so available to citizens. In addition, e-payment through Electronic Clearing System (ECS) is being used to make direct payment to contractors.

(xiii) ***Human resources*****:** MORD has initiated a comprehensive training framework[13] for empowering road agencies and the construction industry to apply latest technologies, international knowledge, and best practices. It covers all road agency staff and contractors' staff, including the construction workers and supervisory staff.

6. **Assessment of PMGSY and areas for program improvement:** Recognizing certain deficiencies and the scope for further improving the Program, the Bank sponsored a detailed assessment of PMGSY (the 'Assessment Report') to further enhance its design and implementation[14]. The Assessment Report has

[11] NRRDA has taken the bold decision to use green, and climate resilient designs and new technologies for 30 percent roads under the additional financing compared to 15 percent in PMGSY.
[12] As an expansion of the National Action Plan on Climate Change (NAPCC) in 2008 and the State Action Plans on Climate Change (SAPCC) developed to implement the National Action Plan.
[13] The training framework is being implemented by the Indian Academy of Highway Engineers and National Institute of Rural Development.
[14] The Assessment Report has two volumes – Volume one: Recommendations to enhance the PMGSY design and its implementation and Volume Two: Appendix on including Training & Capacity Building framework, Young Professional Fellowship Programme, Local Roads Network Framework and Synthesis of previous impact evaluation studies.

recently been released by MORD. Building on its accomplishments, PMGSY now seeks the support of the Bank in implementing the Assessment Report and meeting the following challenges:

(i) ***Speed up implementation*** in low capacity states and 267 identified blocks affected by Left Wing Extremism.

(ii) ***Give special attention to situations that give rise to high construction costs***, e.g., roads connecting to small habitations, areas lacking good road-building materials, difficult terrain or subject to extreme climate-induced events (such as high rainfall and floods)[15]. Enhanced construction cost-effectiveness in PMGSY roads would be transferable to many state-level rural road programs that provide connectivity to smaller habitations not covered under PMGSY.

(iii) ***Reduce the variability of compliance with PMGSY systems and procedures.*** while PMGSY has uniform systems and procedures, the compliance is variable across the states. The Assessment Report contains many recommendations to address this issue.

(iv) ***Continue to build institutional effectiveness,*** including bolstering the capability of rural road agencies and the local construction industry to build quality infrastructure fast, as well as to use modern practices.

(v) ***Reinforce and propagate early successes in addressing status of rural road maintenance,*** as many rural road agencies still rank construction over maintenance. Adequate maintenance of 4.6 million km of existing road network is a big challenge. Many of the PMGSY roads are now completing their design life and now again need rehabilitation. The focus of PMGSY, and the Bank's involvement, is therefore now shifting towards managing the rural road network on long-term basis: this is one of the key focus under the Additional Financing.

(vi) ***Harness the concepts of 'green growth' and climate-resilience,*** as many parts of the existing network are either vulnerable to or have already suffered damage from climate induced events such as floods, high rainfall, sudden cloud bursts and land-slides. There are also unexploited opportunities to introduce green technologies that would provide environmental gains. All the project roads will now be designed incorporating climate resilience, and 30 percent of those will be using green and low carbon designs.

(vii) ***Apply stronger road safety management to rural roads***, because of the increasing penetration of two-wheelers, the impact of which is further aggravated by geometric deficiencies and lack of awareness among road users.

(viii) ***Need to capture the potential gender benefits of rural roads programs:*** women and girls benefit greatly from the ability of all-weather roads to provide them better access, and security of access, to health, education, economic and social opportunities. But there is also scope for their much greater participation in project life-cycle itself such as in design and construction, road maintenance contracting, supply of transport services using new roads.

[15] Measures to address these are given in the new technology guidelines of NRRDA, Guidelines for Environmentally Optimized Designs of Low Volume Roads, and IRC SP 72.

B. Rationale for the Additional Financing.

7. MORD has requested the Bank to increase lending by US$500 million to the Original Project and provide the continuing Bank support which can help tackle the development challenges identified in paragraph 6. Of the US$500 million, USD150 million would be used to meet the funding gap in the Original Project. The remainder US$350 million will be used to introduce green and climate resilient construction in PMGSY while widening the developmental scope to tackle institutional, road safety, low carbon and climate-resilience, gender and other issues described above. (See detailed project components below). The Bank Team has also resolved to work with Indian counterparts to disseminate the PMSGY program internationally as an adaptable model for rural road programs in other countries[16]. It will demonstrate how climate change agenda should be integrated in the rural roads strategy, planning and actions[17].

8. **Eligibility for Additional Financing:** The Additional Financing meets all criteria of suitability and appropriateness: the activities proposed under the Additional Financing are consistent with the PDOs of the project and strategically aligned with Bank priorities; the project performance ratings for IP/PDO over the most recent 12 months have been either Satisfactory or Highly Satisfactory; the project does not have any unresolved fiduciary, environmental, social or safeguard issues; the Borrower has indicated strong interest in scaling up the development impact of the ongoing project through the Additional Financing; and the Additional Financing is the most appropriate way to ensure critical Bank support to ongoing reforms in the rural road sector.

9. ***Alignment with Bank priorities and Government strategy:*** The proposed operation fully aligns with the World Bank Group's goal of reducing poverty and promoting shared prosperity. It will bridge rural infrastructure gaps and enhance rural transport services, with a focus on inclusive access. Better rural connectivity for more communities would lead to higher incomes and more job choices, fostering entrepreneurship especially for women (through both improved rural access and pilot initiatives to involve women in running rural transport services), and improve educational and health outcomes. It will support GOI's development priorities, which emphasize the need for better rural roads to facilitate inclusive growth, economic development, and access to markets; and which seek to enhance effective central-state-local government partnerships. It will contribute to GoI's current priority of doubling farmers' incomes and contribute to attainment of its Sustainable Development Goals (SDGs)[18].

II. DESCRIPTION OF ADDITIONAL FINANCING

C. Key Changes Proposed as part of the Additional Financing

10. The Additional Financing will entail the following changes to the Original Project: (a) an increase of US$485 million in the Bank funding for civil works and US$15 million for institutional development; (b) reduction in the proportion of Bank financing for the additional civil works from 100 percent to 50 percent;

[16] NRRDA is already sharing the PMGSY framework with many countries for their rural road programs.
[17] Contributing towards implementing Government of India's NAPCC and the SAPCC of the respective state governments.
[18] SDGs: Rural roads are proven poverty reducers (Goal 1: Ending Poverty); enable flow of agriculture inputs and farm produce (Goal 2: Food Security and Sustainable Agriculture); allow quicker access to health care and education facilities, specifically for women/girls (Goal 3: Health and well-being, and Goal 4: Inclusive, Equitable and Quality Education); facilitate mobility of labor and increase employment opportunities (Goal 8: sustainable and inclusive economic growth and employment); and connect remote and inaccessible areas with economic opportunities (Goal 10: Reduce Inequality).

(c) inclusion of the state of Tripura as a selected participating state; (d) use of the Bank's new procurement framework of July 1, 2016; (e) increase in risk rating from moderate to substantial; and (f) corresponding changes in the results framework and Disbursement Linked Indicators (DLIs) (refer section VII and Annex-1). One of the key change is introduction of green and climate resilient road construction. The Additional Financing will support 7,000 km climate resilient roads, out of which 3,500 km will be constructed using green technologies. The closing date of the Additional Financing is proposed as December 15, 2020. Table 1 summarizes the projects and financing for the Original Project and the Additional Financing.

Table 1: Summary of Project Cost and Financing (US$ million)

Project Component	Original Project		Proposed Additional Financing		Total	
	Bank	GOI	Bank	GOI	Bank	GOI
PMGSY Program Financing	1,375	-	485	485	1,860	485
Institutional Strengthening	25	-	15	15	40	15
Total	**1,400**	**-**	**500**	**500**	**1,900**	**500**

D. Scope of Additional Financing

11. **Overall Project Design:** The PDO and overall project design of the Additional Financing will remain unchanged from those of the Original Project. The Additional Financing does emphasize on introducing green and climate resilient construction and scaling-up the institutional development agenda under PMGSY. The PDO indicators and the two project components of the Original Project have been modified as follows under the Additional Financing to capture this.

(a) Number of habitations benefited with all-weather roads (number; modified to include the habitations benefited due to rehabilitation of existing poor condition roads, restricted to only "new connectivity" under the Original Project)

(b) Improved condition of core rural road network (percentage; retained from the Original Project)

(c) Improved effectiveness of public expenditure – length of roads used green and climate-resilient designs and new technologies (km; New Indicator)

(d) Improved asset management – number of districts using performance / community based maintenance contracts (New indicator)

12. **Project Components**: The scope of the two project components of the Original Project will be revised to reflect the Additional Financing as follows[19]:

(a) Component A: PMGSY Program Financing (US$970 million).

[19] "New" and "Modified" against each sub-component mean either a new or modified activity with respect to the "Original Project". Sub-Component A3 is already part of the Original Project.

(i) ***Sub-Component A1: Green and Climate Resilient Rural Roads (new):*** This sub-component will include civil works to support construction and/or rehabilitation/ improvement of about 5,500 km of priority rural roads and standalone bridges to provide all-weather access under the PMGSY district rural road plans[20] in the nine selected participating states[21] (Bihar, Jharkhand, Meghalaya, Uttar Pradesh, Himachal Pradesh, Punjab, Uttarakhand, Rajasthan, and Tripura) incorporating adequate climate-resilience and road safety engineering features. This will also include use of green and climate-resilient designs and new technologies for about 2,000 km of roads (refer Annex-2 for technical details). The provision of five-year maintenance will continue to be in-built in each civil works contract.

(ii) ***Sub-Component A2: Pilot Projects to Introduce New Technologies (new):*** Pilot projects[22] to demonstrate the use of green and climate-resilient road designs, innovative bridges, new technologies (such as low-cost surfacing's and pavements) and retrofitting road safety and climate-resilient measures in pilot sections for rehabilitation of about 1,500 km of existing "Through Routes and important link routes"[23] in poor condition in the PMGSY District Rural Road Plans (about 150-200 km per state; in addition to the above selected participating states, other states will be allowed to participate in this sub-component[24]).

(iii) ***Sub-Component A3: Rural Roads under the Original Project:*** This sub-component will support balance civil works on about 4,000 km of rural roads and bridges in the eight participating states under the Original Project. The Bank will finance up to US$150 million, partially meeting the cost-overruns under the Original Project[25].

(b) Component B: Institutional Strengthening (US$30 million)

13. This component will support institutional strengthening (mostly services, goods, and operating expenses) in the entire PMGSY Program (in addition to the above selected participating states) to support asset management, institutional, investment and development effectiveness to complement achievement of the DLI matrix. This component will comprise the following main sub-components:

(i) **Sub-Component B1: Asset management (modified)**: (a) Support to development and implementation of state-level asset management plans (AMPs). This will include setting up simple asset management systems to prepare prioritized plans for capitals works and maintenance including a road and bridge inventory and condition database in the GIS platform including videography; (b) refinements in the rural road core network/ district rural road plans through provision of missing links and inclusion of unlinked habitations and improving overall network efficiency by integrated planning of the various categories of roads; (c) implementation of innovative maintenance contracts for rural road core network, including those involving local communities/micro-enterprise contractors; (d) piloting of

[20] Prepared under PMGSY for each district showing the rural road network.
[21] Other states could join this sub-component during implementation.
[22] While the design of these pilots will be similar to the 2,000 km roads green and climate resilient roads, these pilots will be for rehabilitation of existing "through routes" which carry relatively more traffic and have longer lengths and in poor condition. The idea is focus on consolidation of the rural road network going beyond the basic road access.
[23] Through routes are the ones which collect traffic from several link roads or a long chain of habitations and lead it to a market centre or a higher category road, i.e. the District Roads or the State or National Highways.
[24] If they agree to use of fiduciary and safeguard procedures and implementation arrangement defined for the additional financing.
[25] These works would cost around US$ 385 million, the remaining expenditure will be met by MORD using its own funds.

surface dressing and other technologies for rural roads maintenance; and (e) further refinement of state-level maintenance policies.

(ii) **Sub-Component B2: Green and climate-resilient rural roads strategy (new):** Developing a green and climate-resilient strategy for PMGSY that integrates green and climate resilient concepts and support its implementation by developing similar strategies at state-level, including: (a) network level vulnerability assessments; (b) revision of existing design and construction standards; and (c) detailed engineering designs to pilot retrofitting climate resilience in existing rural roads and bridges. These elements were not in the Original Project but will be integral to the aims of the Additional Financing.

Box-2: Jobs and Gender

The Additional Financing will generate direct employment of about 57 million-person days for local skilled, semi-skilled and unskilled workers including women in rural road construction and maintenance program (refer annex-3 for details). In addition, indirect employment will follow in transport services expansion and economic activities promoted. As part of its gender empowerment, the Additional Financing will create employment opportunities for youth through suitable training programs for field investigations, laboratory work, engineering designs, and other similar tasks. It will also pilot maintenance contracts implemented by women SHGs, and skill enhancement programs for construction workers, increasing employment and income of women construction workers.

(iii) **Sub-Component B3: Skills development and gender-targeted opportunities (modified)**: Further refinement of the PMGSY training framework to develop a comprehensive Human Resources Professional Development Strategy for rural road agencies and construction industry including training materials, international and local training, study tours, workshops, counterpart training. It will also include pilot projects to create employment opportunities for the youth and women self-help groups who could participate in construction, rural roads maintenance and transport services activities. Capacity building is also required for local governments authorities, particularly in effective utilization of the 14th Finance Commission resources.

(iv) **Sub-Component B4: Road safety management (new)**: Establishing state-level Rural Road Safety Action Plans and supporting implementation by preparation of road safety engineering designs for retrofitting road safety measures to the existing rural roads network, technical documentation, district level road safety plans, capacity building of rural road and other related agencies, awareness programs for local governments, communities and work zone safety, integration of road safety in the asset management system and road safety audits of priority rural roads.

(v) **Sub-Component B5: Program Management Strengthening (modified)** : Supporting system-wide improvements for the PMGSY program based on international best practice by development of improved program documentation of PMGSY including related publications of Indian Roads Congress (IRC); further refinements and expansion of OMMAS as a monitoring tool including for sub-national rural road programs; refinements of the e-procurement system and the existing Procurement and Contract Management Manual; development of rural roads vision 2030; implementation of the recommendations of the PMGSY Assessment Report; and studies related to further evolution of PMGSY and management of the rural road sector.

(vi) **Sub-Component B6: Research and development (modified)**: Support[26] to establish centres of excellence and facilitate active participation of PMGSY's technical agencies in further research on new and cost-effective designs using local materials and new technologies through an accelerated testing facility and other modern equipment; capacity building programs for rural road agencies; performance evaluation of new technologies.

(vii) **Sub-Component B7: Outcome monitoring (modified):** Support outcome monitoring studies of PMGSY roads including their contribution of rural roads towards poverty reduction, employment, income, health, education, and achieving SDGs with attention given to differential impacts and realizable benefits by gender.

(viii) **Sub-Component B8: Rural transport services and agriculture supply chain (new)**: Studies to improve rural transport services using the PMGSY road network by cost-effective, reliable and safe passenger and goods transport services. The studies will address the specific travel needs of women and poorer people who generally have low vehicle ownership and for whom the critical issue is that new roads should facilitate improved transport services. This sub-component will, therefore, also seek to strengthen the rural transport services institutional and policy framework, encourage the participation of local transport operators including women's transport groups, and promote the use of clean fuel including electric vehicles. Studies related to improved trade and logistics in rural areas will identify the complementary interventions to be taken up to maximize the positive impact of rural roads on agricultural supply chains.

(ix) **Sub-Component B9: Engineering design, project management and implementation (modified):** This sub-component will include: (a) cost-effective climate-resilient engineering designs and related surveys and investigations; (b) engineering supervision of civil works and independent quality monitoring; (c) project management support both at NRRDA and state-level for civil works and institutional strengthening including techno-financial consultants at NRRDA to review the quality of engineering designs and implementation progress of rural roads; (d) project performance audit services; and (e) providing equipment and office support including video-conferencing facilities between NRRDA, states and field offices; modern surveys and investigation equipment and design tools for planning and design; quality assurance systems; and use of modern IT tools and software.

E. Disbursement Linked Indicators (DLIs)

14. The Additional Financing will reimburse the eligible expenditures as follows: (i) US$150 million (not linked to DLIs) to cover the expenditures related to Sub-Component A3 for the civil works under the "Original Project" mostly to be claimed retroactively; and (ii) US$350 million based on accomplishment of the following DLIs (See Annex 1 for details). Since all DLIs under the Original Project were already achieved, these are now modified, in addition to a new DLI4, to capture the additional results expected under the Additional Financing:

(i) DLI 1 (modified): Improved all-weather road connectivity – extent of habitations benefitted
(ii) DLI 2 (modified): Effectiveness of Public Expenditure
(iii) DLI 3 (modified): Effective Execution of Maintenance Works
(iv) DLI 4 (new): Improved Institutional Effectiveness

[26] Including modernization and strengthening of the required infrastructure for research and training.

15. ***Independent Verification of DLIs***: A designated team of independent experts selected from the pool of NQMs and SQMs and other recognized experts from the road industry will be used to independently verify and certify achievement of DLIs. The NQMs and SQMs are already undertaking quality monitoring of PMGSY works. These are senior-level reputed officers identified through a selection process adopted under PMGSY based on their past performance and integrity in addition to their technical competence[27].

F. Time frame for the Additional Financing

16. ***Closing Date of the Additional Financing:*** The closing date of the Additional Financing is December 15, 2020 providing about thirty-two (32) months to implement the activities proposed under the Additional Financing. All key activities are planned to be procured within the next 4-6 months, leaving about two years for implementation, plus a contingency period of two months for implementation delays. The civil works contracts are for 12-18 months implementation period.

G. Project Implementation Arrangements

17. The implementation arrangements will remain the same as for the Original Project which have been in use for the last 18 years and are amended and refined as needed from time to time based on the implementation experiences. These arrangements are well documented in the PMGSY's Operations Manual. These include independent quality review of engineering designs by "states technical agencies (STAs)" and quality of construction by three tier system of local road agency, State and National Quality Monitors (SQMs and NQMs), and use of OMMAS as a web-based monitoring, management, and accounting system.

18. MORD would continue to have the overall responsibility to oversee project implementation and provide policy guidance. Its technical agency, NRRDA will have the overall responsibility to provide technical expertise and implement the project through the selected participating states[28]. NRRDA has deputed a Project Director who will be responsible for the overall coordination and implementation of the project. The Project Director will be supported by design teams of officers for new technology initiatives and design innovations, asset management and maintenance, core network and GIS data-base, procurement and contract management, quality assurance, social and environment aspects, training, and OMMAS. Considering the extensive institutional strengthening and technical assistance program, additional project management support is provided at both NRRDA and the selected participating states. This will include a techno-financial consultant at NRRDA to review the quality of engineering design and implementation progress of the road works.

19. ***Use of e-tools, citizen engagement and grievance redressal:*** The Additional Financing will use the already established procedures for citizen engagement including participation of women at every stage, transparency and grievance redressal: PMGSY involves citizen at every stage: investment decision, design and construction, feed-back on the program. Citizen information boards are to be provided on all PMGSY Roads. NQMs must mandatorily seek feedback from the local communities including women and share their inspection reports with them which are also available to public through OMMAS. Citizens can now report to the responsible agencies on construction quality issues and road conditions using a mobile based

[27] These experts will undertake the verification task based on procedure agreed with the Bank considering the reports available from OMMAS, quarterly progress reports, reviews with NRRDA and participating states, and field visits.
[28] NRRDA has sign a participation framework with each participating state.

application (Box-3). A State Quality Coordinator (SQC), in each State handles and redress such grievances, providing an interim reply to the citizen within 7 days and producing a final 'Action Taken' report within 60 days.

Box-3: Meri Sadak-Citizen Feedback System

"Meri Sadak" is a mobile application under PMGSY to enable users to give their feedback (with photographs); make the system more transparent and accountable; and monitor the redressal of their feedback through this app.

III. KEY RISKS

20. The overall implementation risk of the Additional Financing is rated "substantial" compared to "moderate" for the Original Project. The risk related to technical design and implementation capacity are now rated as substantial due to introduction of green and climate resilient construction, dispersed nature of civil works across many districts, and big institutional development agenda including asset management and road safety to be implemented in a period of about 32 months. The implementation capacity risk has been increased due to inclusion of new states of Tripura and the provision of additional states joining during implementation as well as limited implementation capacity of many participating states. Thus, the Additional Financing involves additional risks compared to the Original Project[29].

21. Many of the low capacity participating states have seen significant improvement in their implementation capacity and compliance to the Bank's fiduciary and safeguard procedures while implementing the "Original Project". NRRDA is already implementing most of the institutional strengthening activities involving its technical agencies and the participating states. The Additional Financing will provide additional project management support to ensure adequate capacities for implementation of the civil works and institutional strengthening. In addition, active participation of the "Centres of Excellence" and technical agencies of PMGSY will be mobilized to implement the green and climate resilient designs and new technologies and building required capacity and knowledge base in the rural road agencies through implementation of the PMGSY's training framework. Since Bank's fiduciary and safeguard procedures are now mainstreamed in PMGSY, these are also being used in the states where the Bank is not financing any civil work. The Bank will undertake additional assessments on fiduciary and safeguard management before accepting participation of additional state.

22. The implementation performance of the participating states will be carefully monitored and the additional funding will be reallocated to other states in case of slow progress of a participating state as was also done under the Original Project. The civil works construction program in these states has been carefully designed considering the capacity of local construction industry.

23. The Additional Financing will have about 32 months for implementation period. Already, 4,000 km of rural roads from the "Original Project" (Sub-Component A3) are in an advanced stage of completion. Most of the road works under Sub-Component A1 and A2 (7,000 km) would commence from the beginning of the

[29] All key risks for the Additional Financing are accordingly rated low or moderate, and the operation's Systematic Operations Risk-Rating framework would remain unchanged from the Original Project, yielding an overall risk rating of 'Moderate'.

next working session (October 2018). There will be about 24 months available under the Additional Financing to compete the works against 12 to 18 months required under the contract. However, there is a risk of implementation delays in the civil works. Should this risk be found materializing during implementation, the Additional Financing will be restructured to provide adequate time.[30]

24. PMGSY has robust and well-functioning monitoring and grievance redressal mechanisms at local, state, and national level including effective participation of local communities as detailed under the implementation arrangements. These have evolved over the years and effectively handle the challenges associated with executing civil works under dispersed locations. In addition, regular project performance audits will identify any areas and performance short-fall or lack of compliance, enabling NRRDA to take timely actions.

25. The Bank's implementation support has been specifically designed to share international best practices and knowledge on innovative designs, climate agenda, road safety, asset management available both within the Bank and with international road agencies, and to provide customized solutions and handholding support to low capacity states. The Bank is already playing this role by mobilizing assistance under various Trust Funds, knowledge sharing from various Global Solution Groups and Community of Practices, and facilitating participation of international experts in supporting the program.

IV. APPRAISAL SUMMARY

26. **Economic and Financial Analysis:** The Economic analysis of the Original Project relied on a limited sample survey results in Odisha State (2009). The same is now enhanced using data from entire PMGSY in the selected participating states and using the methodology used in the recent Bank's rural roads project in the states of Bihar and Madhya Pradesh[31]. The average daily traffic level on the PMGSY roads in the project states was found to be 292 vehicles per day (89% fast moving vehicles and 11% slow moving vehicles), varying between 133 vehicles (Meghalaya) and 475 vehicles (Uttar Pradesh).

27. The economic analysis shows all the selected participating states meeting, and many exceeding, the viability test at the given social discount rate of 6 percent, even without including flow-on benefits from increases in agricultural productivity, employment accessibility, health and educational benefits. The NPV is US$27.625 billion at 2017 prices and the economic internal rate of return (EIRR) is 22.3 percent. The analysis is based on a representative group of improved road sections ranging in length from 3.16 km (Bihar) to 8.39 km (Uttarakhand), the average being 3.67 km, selected from about 243,635 km of PMGSY roads in eight selected participating states[32]. The primary benefits estimated in the economic appraisal are: (a) the

[30] In that case an interim ICR will also be prepared before project restructuring as the total duration of the project will exceed 10 years. The Bank team has already initiated the process to prepare the interim ICR.

[31] Available guidelines and suggestions from IRC on vehicular trip parameters, Planning Commission, GOI and World Bank (GHG Analysis Road Improvement, Guidance Note, World Bank Group, February 2016; and CCGCE Guidance note on Social Value of Carbon in project appraisal, July 14, 2014) were used in the present economic analysis.

[32] The key assumptions include annual growth rate of traffic of five percent; average cost of construction of US$0.075 million per km (economic cost US$0.067 million per km); 3 years construction period (with the assumption that all previous investment is considered in this implementation period); incremental maintenance cost of US$0.001 million/km and US$0.025 million/km for routine and periodic maintenance respectively for bitumen road, and 5-year and 6-year periodic maintenance cycles for 'without' project and 'with' project cases along with 6 percent social discount rate.

reduction in vehicle operating costs (VOCs); (b) travel time savings for vehicle occupants; and (c) a reduction in carbon emissions from vehicles using the improved roads[33].

28. *Fiscal Analysis:* GOI has committed to provide the counterpart funding requirements during project implementation of about US$500 million. The selected participating states would need to provide about US$50 million/year for operation and maintenance over the period 2021-2036. The selected participating states have confirmed that such levels of support will be maintained.

29. *Carbon Emission Reduction Benefits*: Carbon emission reduction estimates have been made for the whole 243,645 km of PMGSY roads in the selected participating states using the working model for the economic analysis. The estimates have been derived from the improved fuel consumption[34] rates due to road improvements, the carbon emission rate (0.0023 ton/ litre)[35], the value of carbon savings (US$ 38 / ton in 2022)[36] and traffic levels under 'without' and 'with' project scenarios. Though traffic on PMGSY-improved roads would increase, the reduced average fuel consumption (due to better roads) and lower carbon emission rates result in a marginal net decrease in carbon and green-house gas emissions. However, the value of these savings is small in absolute terms and has minimal impact on the estimated EIRR.

30. **Technical Analysis:** PMGSY emphasizes on innovations and new technologies at every stage of the project cycle. It has established "district rural roads plans" showing all the rural roads in a district and a 'core network' defining optimal connectivity from each habitation to nearby markets. The aim is to ensure 'basic road access to all' yielding economic and social inclusion of these rural communities by connecting them with markets, jobs, education establishments, social services, and the national economy. Under the Additional Financing, the technical processes will be both deepened and widened:

(i) ***Network definition:*** The defined core network from which the projects are selected will be reviewed and made more robust by identifying and incorporating crucial missing links, important through-routes, and missing bridges, and by better integrating the rural roads network with the state and national road network which will improve spatial integration and logistics connectivity.

(ii) ***Green and climate-resilient designs and new technologies:*** The Additional Financing will emphasize on adequate climate resilience on all the roads under Sub-components A1 and A2 through vulnerability assessment to identify critical locations susceptible to climate induced events and include adequate measures in their design and construction such as improved waterway and submersible roads for easy passage of flood water in flood affected areas; use of bio-engineering measures, adequate drainage, and protection structures for hill roads; and concrete pavements or improved material specifications for roads in high rainfall areas. Similarly, for the bridges, adequate hydrological calculations, river training works, adequate waterway, and improved designs such as bearing free construction will be used to improve their resilience to water and earth-quake forces.

[33] Based on Evaluation Study by Planning Commission, 2010, unit rates suggested by IRC for motorized vehicles and World Bank Study for Andhra Pradesh (2000). Existing traffic based on primary survey (2017).
[34] Reduced fuel consumption estimated by assuming that travel speed will increase by 20 percent.
[35] GHG Analysis Road Improvement, Guidance Note, World Bank Group, February 2016.
[36] Estimated based on' Guidance Note on Shadow Price of Carbon in Economic Analysis, 12 November 2017, World Bank Group'.

(iii) The Additional Financing will support use of green construction as well as cost-effectiveness through supporting use of low carbon and environmentally optimized designs which propose using local and marginal materials, hill cutting material, and industrial by-products (like fly-ash and quarry waste) in road construction[37], as well as new technologies such as cold-mix technologies, low cost-bitumen surfacing and pavements, and other green technologies for about 3,500 km roads (2,000 km under sub-component A1 and 1,500 km under Sub-component A2).

(iv) ***Design standards and road safety:*** Most of the project roads will be improved to single lane roads (or intermediate or higher roads if justified by traffic volume) using existing alignments by providing improved geometry, pavement, drainage, bridges, and climate-resilient and road safety engineering measures. All roads and bridges will be designed to all-weather standards prescribed by the IRC. The project roads will also include simple road safety audits undertaken during the design and construction stage, as well as in consultations with the local communities.

(v) ***Centres of Excellence:*** An important element of additional financing is to establish centres of excellence in the country to support further research and development work on climate resilient technologies and green technologies in addition to building technical capacity and knowledge base of the rural road agencies in the country.

(vi) ***Asset Management and Maintenance:*** The Project will scale-up the use of performance-based and community-based maintenance contracts, paying special attention to developing the capability of small local maintenance contractors to undertake routine maintenance as sub-contractors.

31. **Financial Management:** The Additional Financing will adhere to the standard PMGSY funds flow arrangements, which entail fund releases by MoRD to the consolidated fund of the respective states and thereafter by the State to SRRDA bank accounts along with State counterpart funds. A customized financial management system is in place for PMGSY, combining the features of traditional works department accounting practices with a double entry accounting system to prepare monthly and annual financial statements. The system is documented in three separate accounts manuals – Program Fund, Administrative Fund and Maintenance Fund. Expenditures related to the World Bank project are separately identified in the OMMAS financial statements. State-wise monthly and annual financial statements for PMGSY are publicly accessible on the OMMAS website[38]. Financial management arrangements at NRRDA level are, by and large, considered adequate. NRRDA has an important role in supervising the day-to-day operation of the PMGSY financial management system, providing timely financial reports to stakeholders including the World Bank and overall guidance in respect of the financial management issues for the project.

32. Based on implementation experience from the Original Project and the assessment of the financial management arrangements of Tripura as part of the preparation for Additional Financing, the fiduciary framework will adhere to the following principles: (a) for each participating state, only civil works expenditures reported from the Receipts and Payments module of OMMAS will be considered 'eligible' for financing; (b) Independent Panel of Experts to verify and validate the achievement of DLIs; and (c)

[37] Thereby saving the natural resource of hard stone aggregate and the environmental costs of its transport, often over long distances. These measures are defined in the "guidelines for environmentally optimized designs for low volume roads, IRC SP72, and new technology guidelines of PMGSY.
[38] The OMMAS website can be accessed at *http://ommas.nic.in*.

NRRDA/MORD oversight and monitoring mechanisms for PMGSY which includes the OMMAS, internal and external audit arrangements, will continue to be followed. The overall rating for fiduciary risks remains 'Moderate'.

33. **Procurement.** Procurement for the Additional Financing will be in accordance with Procurement Regulations for IPF Borrowers for Goods, Works, Non-Consulting and Consulting Services dated July 1, 2016, (the 'Regulations') and the provisions stipulated in the Legal Agreement. The project will be subject to the World Bank's Anticorruption Guidelines, dated October 15, 2006, as revised in January 2011 and as of July 1, 2016. The Original Project has many good features in procurement practice such as use of the Government eProcurement Solution of NIC (GePNIC) system, three tier quality control system, adaptation of standstill period in procurement process, use of performance and community-based maintenance contracts, and use of a well-articulated procurement & contract management manual.

34. *Procurement Risk Assessment and Mitigation*: All procurement under the project will be undertaken at NRRDA or at SRRDA level, managed by trained officials. The procurement capacity of the eight existing participating states is well known, and considered adequate, though their relative status varies. The procurement capacity assessment for the state of Tripura concluded that the officers dealing with procurement in Tripura are well trained and are acquainted with the procurement process as per the manual circulated by NRRDA. However, due to lack of prior experience in the Bank funded projects, they may require training in Bank system and processes. The Bank will provide training and support to NRRDA and SRRDA officials who will be involved in procurement. The overall procurement risk rating for the Original Project of 'Moderate' is retained for the Additional Financing.

35. *Project Procurement Strategy for Development:* In accordance with the Regulations, NRRDA has prepared a Project Procurement Strategy for Development (PPSD) focusing on: improving procurement capacities and performance in low capacity states; harmonizing the procurement procedures of the Bank with those followed under the normal PMGSY and in Asian Development Bank funded PMGSY works; enhancing the e-procurement system; creating a PMGSY-wide Procurement and Contract Management Manual, and regular monitoring of procurement performance. A harmonized standard bidding document based on the PPSD has also been prepared. The Procurement Plan for the first 18 months of project implementation will be submitted to the Bank through Systematic Tracking of Exchanges in Procurement (STEP) (already active in the Original Project) and agreed with the Bank. The procurement plan[39] will be updated annually or as required to reflect changes in capacity or project procurement requirements.

36. *E-procurement System:* MoRD wishes to enhance the existing GePNIC system for better integration *and* monitoring, either by upgrading the existing system or adopting a new e-procurement platform for PMGSY. Before the new system is effective, the existing GePNIC system will continue to be used. As GePNIC system currently lacks capability for review and analysis of a full procurement process, detecting fraud and corruption, and detailed project monitoring. It is proposed to use the Open Contracting Data Standard (OCDS) for the Additional Financing phase. One of the participating states will be the pilot for implementation of OCDS to assess its impact and usefulness; replication in other states will be considered if the results are favorable.

[39] Will also include details of procurement methods and thresholds.

37. **Environment.** The adverse cumulative direct, indirect and induced impacts resulting from the development of a rural roads network through a program of the scale of PMGSY can pose significant long-term threats to the environment, which must be addressed appropriately.

38. *Key Environmental Impacts.* Deficiencies in planning and design of sub-projects (that is, individual roads) can lead to failure to conserve the natural drainage pattern, causing excess water in some areas and deficit in others. Inadequate slope stabilization provisions and improper disposal of construction wastes, including earth cuts in hilly terrain, can cause landslips and slides, soil erosion, siltation of water bodies and degradation of land and assets in the process. The stability of cut slopes for new and/or widened roads and the disposal of debris and spoils are key concerns in hill states like Himachal Pradesh, Uttarakhand, Meghalaya, and Tripura. New roads in remote locations may also affect a range of critical natural habitats, such as protected areas, wildlife corridors, wetlands and forests. A significant proportion of the land area of states like Himachal Pradesh, Jharkhand, Meghalaya, Uttarakhand, and Tripura is under forest cover and needs more robust planning and design of sub-projects to avoid, minimize and manage adverse environmental impacts.

39. *Environment Management Approach:* The above environment issues under the Additional Financing will be managed through the Revised Environmental and Social Management Framework (ESMF) adopted under the "Original Project" to avoid, minimize, mitigate, and manage the environmental issues likely to arise during the planning/design and implementation of sub-project level activities. The modified ESMF includes the new state of Tripura and the changes in the environment related laws and policies[40]. It comprises two volumes: (i) an ESMF, the main volume that provides an overview of the approach and institutional arrangements for managing environmental and social issues; and (ii) Environmental Codes of Practice (ECoPs), containing 20 codes, each covering a guidance note on specific environmental aspects.

40. The ESMF is a comprehensive and a systematic guide, covering policies, procedures and provisions, which are being or will be, integrated with the overall project cycle to ensure that the environmental aspects are systematically identified and addressed at the sub-project level. The use and integration of ESMF/ECoPs into the project cycle will also support compliance with both the Bank's Safeguard Policies and the regulatory requirements of GoI and individual states. The two instruments standardize the environment management approach across many similar small-scale rural road sub-projects spread across a wide geographical area.

41. Certain critical environmental issues, such as adverse impacts on ecologically sensitive areas, need specific treatment. They will be avoided or mitigated by applying Environmental Screening to determine the likelihood of any possible direct impacts on natural habitats in either the selection, design and/or construction of a sub-project in an ecologically sensitive area. The screening methodology provided as part of the ESMF/ECoPs will identify the magnitude and/or sensitivity of environmental issues at the sub-project level, particularly in relation to ecologically sensitive habitats. Such cases are likely to be very few (about one percent) but specific guidance on selection, design, mitigation and/or management measures (as applicable in the context of an individual sub-project) will be provided.

[40] The ESMF was developed under the World Bank funded Rural Roads Project (RRP I now closed) based on a comprehensive diagnostic review/gap analysis, contains implementation experiences of Bank's rural roads projects, and is already in use in PMGSY.

42. Some important initiatives will be undertaken and supported under the Additional Financing for enhancing the environmental management dimensions in PMGSY. These initiatives will aim to improve program delivery in terms of time, cost and quality, and will include: (i) further strengthening of the DPR Template to mainstream environmental features/issues as part of the planning and engineering/design process (to include new techniques/methodologies); (ii) building capacity to implement the environmental dimensions included in the Book of Technical Specifications for Rural Roads used in the Original Project; (iii) refining and updating environment, health and safety requirements in the Model Bidding Document to strengthen compliance during the construction stage; and (iv) technical assistance and training support for mainstreaming environmentally-optimized and climate-resilient designs in rural roads.

43. **Social (including Safeguards).** The rural roads built under PMGSY are mostly constructed along the existing tracks used by rural traffic. For a few roads, small quantities of additional land will be required to improve the geometry at isolated locations. The Additional Financing will also use the Social Management Framework (SMF) and the Vulnerability Framework (VF) documents adopted under the Original Project, and now modified to include the state of Tripura[41], to mitigate any adverse social impacts, mostly small land take, in accordance with existing national and state legislations and in compliance with the Bank's social safeguards policies - OP 4.12 and OP 4.10. The four key pillars of SMF are: (a) information dissemination; (b) consultations; (c) documentation; and (d) collaboration. SMF guides the engagement of communities, land transfer by donation or purchase and, in the case where involuntary resettlement is required, the avoidance of harm to the project affected persons. The SMF provides for community participation in design, implementation and monitoring, grievance redressal, and entitlement remedies for project affected persons and village communities. The VF aims to address vulnerability resulting from social identity (notably gender, scheduled caste and scheduled tribe) and help promote equitable distribution of project benefits among the scheduled tribes and scheduled caste population. Where scheduled tribes represent over ten percent of a participating village, the VF requires holding a free, prior and informed consultation with them to seek their broad support for the project as required by OP 4.10.

44. Implementation experience of these frameworks has been largely positive. NRRDA has now mainstreamed the Bank's safeguard provisions in PMGSY through its Operations Manual, templates used to prepare detailed engineering designs, transect walks and community consultations, citizen monitoring, and grievance redress mechanisms. These have helped to improve the quality of construction and outcomes. Land take has been largely avoided or minimized using SMF provisions. The Bank's thematic assessment in the states of Rajasthan and Uttar Pradesh has found limited adverse impacts on people, largely restricted to the modest loss of land from the widening of existing tracks[42]. All have expressed no objection to donating these small strips of lands, which have not involved any physical relocation of people. The VF has benefitted tribal and scheduled caste population. In addition, improved roads have facilitated construction/improvements to community infrastructure.

[41] Also include latest legal and policy developments relating to land and R&R in the country, besides provisions relating to labor influx.

[42] Less than one percent of vulnerable households reported loss of more than 10 percent of land holding in the states of Uttar Pradesh and Rajasthan.

45. ***Gender Based Violence (GBV) and Labour Influx***: Experiences from the Original Project[43] show that the small size civil works in PMGSY have neither attracted nor likely to attract outside contractors and migrant labour force from other state or districts. Majority of laborers hired for road works are local, substantially reducing labor-influx. There is abundant supply of local construction workers and the contractors find it economical to engage them. PMGSY policy is to provide equal opportunity to women but the low rate of participation of women in transport sector construction and maintenance program is a nationwide issue and addressing this is a priority of the government. In the instances of labor influx and GBV, the contract conditions include robust provisions for Environment, Social, Health and Safety (ESHS) including applicable labour laws and the metrics for periodic reporting by contractors. Specific ESHS instruments also include ESHS performance security, ESHS strategy, implementation plan, code of conduct and declaration of past ESHS performance. These documents are to be submitted by the contractor as part of the technical bid. The reporting requirements and the built-in grievance redressal mechanism will also enable participating states, in addition to NQMs and SQMs, to monitor compliance of ESHS provisions. The Bank is undertaking studies pertaining to road construction industry including the above impacts of the PMGSY contracts to further enhance related contract provisions and their compliance.

46. NRRDA will engage a safeguard specialist to guide and monitor implementation of SMF in the participating states. Each participating state will also designate an officer at SRRDA and each PIU level to ensure effective implementation of ESMF. These officers will be given special training in implementation of ESMF during preparation of engineering design and construction. In addition, periodic thematic reviews for the implementation of ESMF will also be undertaken.

WORLD BANK GRIEVANCE REDRESS

47. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit *http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service*. For information on how to submit complaints to the World Bank Inspection Panel, please visit *www.inspectionpanel.org*

[43] And also from other Bank's Rural Road Projects in India

V. SUMMARY TABLE OF CHANGES

	Changed	Not Changed
Change in Results Framework	✓	
Change in Components and Cost	✓	
Change in Loan Closing Date(s)	✓	
Change in Legal Covenants	✓	
Change in Procurement	✓	
Change in Implementing Agency		✓
Change in Project's Development Objectives		✓
Cancellations Proposed		✓
Reallocation between Disbursement Categories		✓
Change in Disbursements Arrangements		✓
Change in Safeguard Policies Triggered		✓
Change of EA category		✓
Change in APA Reliance		✓

VI. DETAILED CHANGE(S)

RESULTS FRAMEWORK

Project Development Objective Indicators

Number of habitations benefited with all-weather roads
Unit of Measure: Number
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	67.00	90.00	72.00	Marked for Deletion
Date	31-Dec-2010	30-Jun-2016	31-Oct-2017	

Improved condition of core rural road network
Unit of Measure: Percentage
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	55.00	64.00	68.00	Revised
Date	31-Mar-2018	30-Apr-2018	15-Dec-2020	

Improved effectiveness of public expenditure - Km of roads used green and climate resilient designs and new technologies
Unit of Measure: Kilometers
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00		2,000.00	New
Date	31-Mar-2018	31-Mar-2021	15-Dec-2020	

Improved asset management - number of districts implementing performance and/or community based maintenance contracts
Unit of Measure: Number
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	10.00		50.00	New
Date	31-Mar-2018	31-Mar-2021	15-Dec-2020	

Number of habitations benefitted with all-weather roads
Unit of Measure: Number
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00		2,000.00	New
Date	31-Jan-2018		15-Dec-2020	

Intermediate Indicators

Improved all-weather road connectivity
Unit of Measure: Number
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	27,600.00	50,420.00	39,331.00	Marked for Deletion
Date	31-Dec-2010	30-Jun-2016	31-Oct-2017	

Effectiveness of Public Expenditures - Number of districts establishing GIS based road and bridge inventory and condition database

Unit of Measure: Number
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	2.00		20.00	Revised
Date	31-Mar-2018	26-Dec-2017	15-Dec-2020	

Effectiveness of Public Expenditures - improved planning systems
Unit of Measure: Text
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	To be drafted		Adoption of the Manual	Revised
Date	31-Mar-2018	30-Jun-2016	15-Dec-2020	

Effectiveness of Public Expenditures - Quality
Unit of Measure: Text
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	3 tier quality control system not fully implemented and percentage of completed works rated satisfactory ranging from 63% to 99%	Fully achieved.	0.95	Marked for Deletion
Date	31-Dec-2010	30-Jun-2016	31-Oct-2017	

Effectiveness of Public Expenditures - roads constructed using climate resilient and environemently optimized road designs
Unit of Measure: Kilometers
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00		2,000.00	Marked for Deletion
Date	31-Mar-2018	30-Apr-2018	31-Mar-2021	

Effectiveness of Public Expenditure - vulnerability assessment
Unit of Measure: Kilometers
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00		5,000.00	Revised

Date	31-Mar-2018	30-Jun-2016	15-Dec-2020	

Effectiveness of public expenditure - Number of states having prepared road safety action plan
Unit of Measure: Number
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00		10.00	New
Date	31-Mar-2018		15-Dec-2020	

Effectiveness of Public Expenditures – procurement and contract management manual
Unit of Measure: Text
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	Draft under preparation		Adopted	New
Date	31-Mar-2018		15-Dec-2020	

Effectiveness of Public Expenditures –award of civil works within 45 days of bids submission
Unit of Measure: Percentage
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	77.00		90.00	New
Date	31-Mar-2018		15-Dec-2020	

Effective Execution of Maintenance Works - Number of states with asset management plans adopted
Unit of Measure: Number
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00		10.00	New
Date	31-Mar-2018		15-Dec-2020	

Effective Execution of Maintenance Works - Number of districts that publicly disclose annual maintenance plans
Unit of Measure: Number
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00		20.00	New
Date	31-Mar-2018		15-Dec-2020	

Improved Institutional Effectiveness - Number of staff accredited after completing training
Unit of Measure: Number

Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00		2,000.00	New
Date	31-Mar-2018		15-Dec-2020	

Improved Institutional Effectiveness - Number of districts with disclosure of annual performance reports
Unit of Measure: Number
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00		20.00	New
Date	31-Mar-2018		15-Dec-2020	

Improved Institutional Effectiveness - Number of workshops organized for Gender based capacity enhancement
Unit of Measure: Number
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00		50.00	New
Date	30-Mar-2018		15-Dec-2020	

Improved Institutional Effectiveness - Number of women benefitted through self-help groups engaged in post-construction maintenance contracts
Unit of Measure: Number
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	100.00		2,000.00	New
Date	30-Mar-2018		15-Dec-2020	

Improved Institutional Effectiveness - Effective citizen feedback mechanism
Unit of Measure: Percentage
Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00		85.00	New
Date	30-Mar-2018		15-Dec-2020	

COMPONENTS

Current Component Name	Current Cost (US$, millions)	Action	Proposed Component Name	Proposed Cost (US$, millions)
PMGSY Program Financing	1,440.00	Revised	PMGSY Program Financing	970.00
Institutional Strengthening	60.00	Revised	Institutional Strengthening	30.00
TOTAL	**1,500.00**			**1,000.00**

LOAN CLOSING DATE(S)

Ln/Cr/Tf	Status	Original Closing	Current Closing(s)	Proposed Closing	Proposed Deadline for Withdrawal Applications
IBRD-79950	Effective	30-Nov-2015	30-Jun-2018	30-Jun-2018	30-Oct-2018
IDA-48480	Effective	30-Nov-2015	30-Jun-2018	30-Jun-2018	30-Oct-2018
IDA-48490	Effective	30-Nov-2015	30-Jun-2018	30-Jun-2018	30-Oct-2018

Expected Disbursements (in US$, millions)

Fiscal Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Annual	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	200.00	200.00
Cumulative	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	300.00	500.00

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Latest ISR Rating	Current Rating
Political and Governance	Moderate	Moderate
Macroeconomic	Low	Low
Sector Strategies and Policies	Low	Low
Technical Design of Project or Program	Low	Substantial
Institutional Capacity for Implementation and Sustainability	Moderate	Substantial
Fiduciary	Low	Moderate
Environment and Social	Moderate	Moderate
Stakeholders	Moderate	Moderate
Other		
Overall	Moderate	Substantial

LEGAL COVENANTS – PMGSY Rural Roads Project (P124639)

Loan/Credit/TF	Description	Status	Action
IBRD-79950	Finance Agreement :Schedule 2, Section I.3 | Description :Independent Performance Auditor to be hired to clarify the status of meeting the conditions of disbursement. | Due Date :15-Aug-2011	After delay complied with	Marked for Deletion
IBRD-79950	Finance Agreement :Schedule 2, Section I.5 (c) | Description :Each participating state and SRRDS to carry out activities in accordance with the ESMF, ECOP, SMF and the Vulnerability Framework | Frequency :Monthly	Complied with	Marked for Deletion
IBRD-79950	Finance Agreement :Schedule 2, Section I.5 (e) | Description :The Recipient shall ensure that the project is carried out in accordance with the provisions of the Anti-Corruption Guidelines and GAAP. | Frequency :Monthly	Complied with	Marked for Deletion
IBRD-79950	Finance Agreement :Schedule 2, Section II.B (2) and (3) | Description :NRRDA shall produce interim-unaudited financial reports of the project on June 1 and December 1 of each year to support disbursement for eligible expenditure under the credit | Frequency :Yearly	Complied with	Marked for Deletion

LEGAL COVENANTS – Additional Financing for PMGSY Rural Roads Project (P165402)

Sections and Description
Implementation Responsibilities: GoI to: (a) through MoRD, provided oversight and coordination for Project activities; and (b) through NRRDA, manage and monitor the day-to-day Project implementation and provide overall strategic technical advice to the participating states and their respective SRRDAs. Frequency: Throughout Implementation
OMMAS: GoI to cause the participating states to report the program of eligible expenditures through the receipts and payment module of the on-line management monitoring and accounting system (OMMAS) for the civil works incurred under their respective parts of the Project. Frequency: Throughout Implementation
OMMAS & Verification Reports: GoI, through NRRDA, to: (a) employ independent expert(s) to carry out performance audit reports and certify the completion of DLIs/DLRs (Verification Reports), and (b) furnish copies of such Verification Reports with the Association.

Due Date: June 1 and Dec. 1 each year Frequency: Semi-annually
Project Documents: GoI to implement the Project and cause the participating states to implement their respective activities under the Project in accordance with the Operations Manual, the Procurement & Contract Management Manual (as revised) the revised Environmental and Social Management Framework, the Environmental Codes of Practice, the Social Management Framework and the Vulnerability Framework (the Project Documents). Frequency: Throughout Implementation
Letters of Undertaking: GoI to cause each participating state to execute a letter of undertaking (as pre-conditions for its participation in the Project) setting forth, among others: (a) its commitment to the Project and adherence to the General Conditions; (b) the establishment of the respective Project Implementation Unit; (c) the adherence to the Project Documents and ensuring compliance therewith; and (d) the adoption the Procurement Regulations. Frequency: Throughout Implementation
Appraisal of Participating States: GoI to ensure that, prior to carrying out any pilot civil works under Part A.2 of the Project: (a) the respective participating state (other than the selected participating states), its SRRDA and the relevant detailed project reports for such civil works shall have been appraised by the Bank; and (b) the Bank shall have confirmed in writing its no objection. Frequency: Throughout Implementation

Conditions

Results Framework
COUNTRY: India
Additional Financing for PMGSY Rural Roads Project

Project Development Objectives

The objective is to strengthen the systems and processes of the national PMGSY rural roads program for the expansion and maintenance of all-season rural accessroads. The result will enhance the road connectivity to economic opportunities and social services for beneficiary communities in the participating states.

Project Development Objective Indicators

Action	Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source / Methodology	Responsibility for Data Collection
Revised	Name: Improved condition of core rural road network		Percentage	55.00	68.00			
Description: The percentage of roads in the network at a pre-specified PCI level (PCI>2). The Pavement Condition Index (PCI) is based on visual observations and is to be measured as per procedure defined under PMGSY. The road condition is expected to improve because of construction of project roads and innovative maintenance contracts introduced through the technical assistance under the Project.								
New	Name: Improved effectiveness of public expenditure - Km of roads used green and climate resilient designs		Kilometers	0.00	2,000.00			

	and new technologies							
Description: The number of kilometer of roads constructed using “Environmentally- optimized Design Guidelines for Low Volume Roads” adopted by NRRDA, new design approaches introduced under Indian Roads Congress Guidelines IRC SP72 (issued in 2015), and new technology Guidelines of PMGSY.								
New	**Name:** Improved asset management - number of districts implementing performance and/or community based maintenance contracts		Number	10.00	50.00			
Description: This indicator measures the number of districts implementing performance and / or community based maintenance contracts including those implemented by women self-help groups.								
New	**Name:** Number of habitations benefitted with all-weather roads		Number	0.00	2,000.00			
Description: The habitations benefited are those which are provided with all-weather road access either through construction of new roads or rehabilitation of existing roads which are in poor condition including the provision of required bridges and culverts. The poor condition is defined as the roads having a Pavement Condition Index (PCI) < 2. PCI is defined in the Operations Manual of PMGSY.								

Intermediate Results Indicators

Action	Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source / Methodology	Responsibility for Data Collection
Revised	**Name:** Effectiveness of Public Expenditures - Number of districts establishing GIS based road and bridge inventory and condition database		Number	2.00	20.00	Annual	OMMAS/ Project Quarterly Monitoring Reports	NRRDA
Description: Protocol: The number of districts in the PMGSY states which have established a GIS based road and bridge inventory and condition database (including videography).								
Revised	**Name:** Effectiveness of Public Expenditures - improved planning systems		Text	To be drafted	Adoption of the Manual	Not applicable	Project Quarterly Monitoring Reports	NRRDA
Description: NRRDA to issue a project preparation manual for rural roads defining the surveys and investigations to be undertaken for the designing of road geometry, pavement, culverts and bridges, road safety measures, green and climate-resilient roads, templates to present design data, and detailed drawings. At least two of the Participating States should have prepared detailed engineering designs based on this manual for at least one PMGSY roads.								
Revised	**Name:** Effectiveness of Public Expenditure - vulnerability		Kilometers	0.00	5,000.00	not applicable	Project Quarterly Monitoring Reports	NRRDA

	assessment							
Description: The kilometers of roads assessed to identify the critical road sections and bridges vulnerable to climate-induced events such as frequent floods, submergence, high rainfall, water-logging, poor drainage, excessive erosion, landslides, unstable side slopes, and roads running along water bodies.								
New	**Name:** Effectiveness of public expenditure - Number of states having prepared road safety action plan		Number	0.00	10.00	Annual	Project Quarterly Monitoring Reports	NRRDA
Description: Number of states that have prepared and adopted a road safety action plan for rural roads.								
New	**Name:** Effectiveness of Public Expenditures – procurement and contract management manual		Text	Draft under preparation	Adopted	Not Applicable	Project Quarterly Monitoring Report	NRRDA
Description: NRRDA has issued a revised “Procurement and Contract Management Manual” for the Project, and the SRRDAs of at least five selected participating states have adopted and utilized it in the implementation of civil works under the PMGSY rural roads program. The Manual should define the operating principles for the revised standard bidding document of PMGSY.								
New	**Name:** Effectiveness of Public Expenditures –award of civil works within 45 days of bids submission		Percentage	77.00	90.00	Annual	Project Quarterly Monitoring Reports	NRRDA
Description: Percentage of civil works that have been procured within 45 days from the date of bid submission. The program aims to strengthen state-								

level procurement systems through introduction of e-procurement, procurement and contract management manual, contractor outreach and capacity building of implementing agencies. It is expected that these initiatives will increase the procurement performance.								
New	**Name:** Effective Execution of Maintenance Works - Number of states with asset management plans adopted		Number	0.00	10.00	Not Applicable	Project Quarterly Progress Reports	NRRDA
Description: Number of States that have adopted asset management plans for the operation and maintenance of their rural roads.								
New	**Name:** Effective Execution of Maintenance Works - Number of districts that publicly disclose annual maintenance plans		Number	0.00	20.00	Not applicable	OMMAS / Project Quarterly Monitoring Reports	NRRDA
Description: Number of Districts that publicly disclose annual maintenance plans through OMMAS or SRRDAs websites.								
New	**Name:** Improved Institutional Effectiveness - Number of staff accredited after completing training		Number	0.00	2,000.00	Annual	Project Quarterly Monitoring Reports	NRRDA
Description: Two thousand (2,000) staff accredited.								

New	**Name:** Improved Institutional Effectiveness - Number of districts with disclosure of annual performance reports		Number	0.00	20.00	Annual	OMMAS/ Project Quarterly Monitoring Reports	NRRDA
Description: The number of Districts that have prepared and disclosed their rural roads operation and maintenance annual performance reports in OMMAS or SRRDA website.								
New	**Name:** Improved Institutional Effectiveness - Number of workshops organized for Gender based capacity enhancement		Number	0.00	50.00	EOP	Project Quarterly Monitoring Reports	NRRDA
Description: Number of training workshops for youth on laboratory and field investigations, engineering designs, and other similar tasks, and gender-based skill enhancement for construction workers and small contractors.								
New	**Name:** Improved Institutional Effectiveness - Number of women benefitted through self-help groups engaged in post-construction maintenance		Number	100.00	2,000.00	EOP	Project Quarterly Monitoring Reports	NRRDA

	contracts							
Description: Number of women benefitted through self-help groups engaged in post-construction maintenance contracts								
New	**Name:** Improved Institutional Effectiveness - Effective citizen feedback mechanism		Percentage	0.00	85.00	EOP	OMMAS/ Project Quarterly Monitoring Reports	NRRDA
Description: Percentage of feedback from citizens on project roads received on mobile app (“Meri Sadak”) and through other means (e-mail, post, etc.) responded to within 30 days.								

Target Values

Project Development Objective Indicators

Action	Indicator Name	Baseline	End Target
Revised	Improved condition of core rural road network	55.00	68.00
New	Improved effectiveness of public expenditure - Km of roads used green and climate resilient designs and new technologies	0.00	2,000.00
New	Improved asset management - number of districts implementing performance and/or community based maintenance contracts	10.00	50.00
New	Number of habitations benefitted with all-weather roads	0.00	2,000.00

Intermediate Results Indicators

Action	Indicator Name	Baseline	End Target
Revised	Effectiveness of Public Expenditures - Number of districts establishing GIS based road and bridge inventory and condition database	2.00	20.00
Revised	Effectiveness of Public Expenditures - improved planning systems	To be drafted	Adoption of the Manual
Revised	Effectiveness of Public Expenditure - vulnerability assessment	0.00	5,000.00
New	Effectiveness of public expenditure - Number of states	0.00	10.00

	having prepared road safety action plan		
New	Effectiveness of Public Expenditures – procurement and contract management manual	Draft under preparation	Adopted
New	Effectiveness of Public Expenditures –award of civil works within 45 days of bids submission	77.00	90.00
New	Effective Execution of Maintenance Works - Number of states with asset management plans adopted	0.00	10.00
New	Effective Execution of Maintenance Works - Number of districts that publicly disclose annual maintenance plans	0.00	20.00
New	Improved Institutional Effectiveness - Number of staff accredited after completing training	0.00	2,000.00
New	Improved Institutional Effectiveness - Number of districts with disclosure of annual performance reports	0.00	20.00
New	Improved Institutional Effectiveness - Number of workshops organized for Gender based capacity enhancement	0.00	50.00
New	Improved Institutional Effectiveness - Number of women benefitted through self-help groups engaged in post-construction maintenance contracts	100.00	2,000.00
New	Improved Institutional Effectiveness - Effective citizen feedback mechanism	0.00	85.00

Annex-1: Disbursement Linked Indicators Matrix

Country: India
Additional Financing for PMGSY Rural Roads Project

DLIs	Total Financing Allocated to DLI (US $ million)	Target	Verification Protocol		
			Data/ Information Source	Verification Agency	Procedure
DLI #1 Improved all-weather roads					
Number of habitations benefited with improved connectivity either through construction of new roads or rehabilitation of existing roads in poor condition	100	2000 habitations	OMMAS	Designated Independent Panel of Experts	The habitations benefited are those which are provided with all-weather road access either through construction of new roads or rehabilitation of existing roads which are in poor condition including the provision of required bridges and culverts. The poor condition is defined as the roads having a Pavement Condition Index (PCI)< 2. PCI is defined in the Operations Manual of PMGSY. **Protocol:** USD 20 million upon achievement of improved connectivity to at least 400 benefited habitations, and USD 5 million for each additional 100 habitations with improved connectivity thereafter, up to a maximum of USD 115 million.
DLI # 2 Effectiveness of Public Expenditure					
2.1 Establishing a GIS based road and bridge inventory and condition	20	At least 20 districts	Project Quarterly Progress	Designated Independent Panel of Experts	Number of districts which have established a GIS based road and bridge inventory and condition database (including videography). The database should include at least road geometry, pavement thickness and composition, bridges and

DLIs	Total Financing Allocated to DLI (US $ million)	Target	Verification Protocol		
			Data/ Information Source	Verification Agency	Procedure
database (including videography)			Reports/ OMMAS		culverts, traffic level, road condition and construction data. Each district will be counted only once. **Protocol:** USD 4 million upon the establishment of databases in at least 4 Districts, and USD one million for each additional District with an established database thereafter, up to a maximum of USD 23 million
2.2 Improved planning system	10	Adopted & Utilization	Project Quarterly Progress Reports	Designated Independent Panel of Experts	NRRDA to issue a project preparation manual for rural roads defining the surveys and investigations to be undertaken for the designing of road geometry, pavement, culverts and bridges, road safety measures, green and climate-resilient roads, templates to present design data, and detailed drawings. At least two of the Participating States should have prepared detailed engineering designs based on this manual for at least one PMGSY roads. **Protocol:** USD 10 million
2.3 Roads constructed using green and climate-resilient designs and new technologies	50	2000 km	Project Quarterly Progress Reports/ OMMAS	Designated Independent Panel of Experts	The number of kilometer of roads constructed using "Environmentally- optimized Design Guidelines for Low Volume Roads" adopted by NRRDA, new design approaches introduced under Indian Roads Congress Guidelines IRC SP72 (issued in 2015), and new technology Guidelines of PMGSY. **Protocol:** USD 10 million upon the construction of at least 400 km of green and climate-resilient roads, and USD 5 million for

DLIs	Total Financing Allocated to DLI (US $ million)	Target	Verification Protocol		
			Data/ Information Source	Verification Agency	Procedure
					every additional 200 km built thereafter, up to a maximum of USD 57 million.
2.4 Vulnerability Assessment	20	5000 km	Project Quarterly Progress Reports	Designated Independent Panel of Experts	The kilometers of roads assessed to identify the critical road sections and bridges vulnerable to climate-induced events such as frequent floods, submergence, high rainfall, water-logging, poor drainage, excessive erosion, landslides, unstable side slopes, and roads running along water bodies. **Protocol**: USD 4 million upon the completion of vulnerability assessment for at least 1000 km of rural roads; and USD 1 million for each additional 250 km of rural roads assessed thereafter, up to a maximum of USD 23 million.
2.5 Road Safety Action Plans	20	At least 10 states	Project Quarterly Progress Reports	Designated Independent Panel of Experts	The number of states that have prepared and adopted a road safety action plan for their rural roads based on "Safe System Approach" as defined by the World Road Congress. **Protocol:** USD 4 million upon the adoption of road safety action plans by at least two State; and USD 2 million per additional State adopting such plan thereafter, up to a maximum of USD 23 million.
2.6 Procurement and contract management manual	10	Adopted & Utilization	Project Quarterly Progress Reports	Designated Independent Panel of Experts	NRRDA has issued a revised "Procurement and Contract Management Manual" for the Project, and the SRRDAs of at least five selected participating states have adopted and utilized it in the implementation of civil works under the PMGSY rural roads program. The Manual should define the

DLIs	Total Financing Allocated to DLI (US $ million)	Target	Verification Protocol		
			Data/ Information Source	Verification Agency	Procedure
					operating principles for the revised standard bidding document of PMGSY. **Protocol:** USD 10 million
DLI # 3 Effective Execution of Maintenance Works					
3.1 Asset Management Plans	30	At least 10 states	Project Quarterly Progress Reports	Designated Independent Panel of Experts	The number of states that have prepared and adopted asset management plans for the operation and maintenance of their rural roads. The asset management plans should define the long-term vision of the rural road agency and a corresponding strategy to build, maintain, and update the road assets to achieve that, including a long-term financing plan to realize the vision. **Protocol:** USD 6 million upon the adoption of asset management plans by at least two State, and USD 3 million per additional States adopting such plan thereafter, up to a maximum of USD 34 million.
3.2 Planned maintenance contracting	30	At least 30 districts	Project Quarterly Progress Reports	Designated Independent Panel of Experts	The number of districts implementing performance based / community based maintenance contracts including those implemented by women self-help groups. The contracts are designed to deliver routine and/or periodic maintenance of rural roads which have completed their post 5-year maintenance period under PMGSY. Each district will be counted only once.

DLIs	Total Financing Allocated to DLI (US $ million)	Target	Verification Protocol		
			Data/ Information Source	Verification Agency	Procedure
					Protocol: USD 5 million upon the performance-based/community-based contracting by at least five Districts, and USD 1 million for each additional District using such contracting modalities thereafter, up to a maximum of USD 34 million.
3.3 Public disclosure of annual maintenance plans	20	At least 20 districts	Project Quarterly Progress Reports	Designated Independent Panel of Experts	The number of districts that publicly disclose annual maintenance plans through OMMAS or SRRDAs websites. The plans will include the yearly maintenance activities to be undertaken for each rural road in the district. Each district will be counted only once. **Protocol**: USD 4 million upon the disclosure of annual maintenance plan by at least four Districts; and USD 1 million per any additional District disclosing such plans thereafter, up to a maximum of USD 23 million.
DLI #4 Improved Institutional Effectiveness					
4.1 Staff accredited after training	20	2000 staff	Project Quarterly Progress Reports	Designated Independent Panel of Experts	The number of NRRDA and SRRDA staff which have been accredited after completing minimum of two training modules prescribed under the training framework of PMGSY. **Protocol:** USD 4 million upon the training accreditation of at least 400 staff; and USD 1 million per every 100-additional staff accredited thereafter, up to a maximum of USD 23 million.

DLIs	Total Financing Allocated to DLI (US $ million)	Target	Verification Protocol		
			Data/ Information Source	Verification Agency	Procedure
4.2 Public Disclosure of Annual Performance Reports in OMMAS	20	At least 20 Districts	Project Quarterly Progress Reports	Designated Independent Panel of Experts	The number of districts that have prepared and disclosed their rural roads operations and maintenance annual performance reports in OMMAS or SRRDAs websites. The elements of the reports will include habitation connectivity, road condition, road network under planned maintenance, maintenance funding, procurement and contract management performance. Each district will be counted only once. **Protocol**: USD 5 million upon the disclosure of annual performance reports by at least five Districts; and USD 1 million per any additional District disclosing such plans thereafter, up to a maximum of USD 23 million.

Annex-2: Mainstreaming climate-resilient and low-carbon concepts in PMGSY

Country: India
Additional Financing for PMGSY Rural Roads Project

Climate-resilient and low carbon road infrastructure – A priority under PMGSY

1. The roads and bridges in the participating states are prone to excessive damages due to floods, sudden cloud bursts, heavy rains and storms, landslides, waterlogging, submergence, draughts, and high temperatures due to wide range of terrain and climatic conditions prevailing in the states (Box-2.1). Many of the roads and bridges get washed away during floods and sudden cloud bursts causing loss of critical road access to rural communities and costly repairs of the road infrastructure. Often, the road agencies are not able to fund the costly repairs and reconstruction, consequently the rural communities continue to suffer the loss of road access. A large part of the existing rural road network has already suffered serious damages. The service life of the roads subjected to such events is also low thus requiring frequent reconstruction and heavy maintenance. Weaknesses in engineering designs and construction quality as well as inadequate maintenance of the existing road network further aggravate the impact of these events.

2. In addition, the conventional road construction mostly relies on use of natural aggregates thus causing heavy pressure on scarce natural resources and adverse environmental impacts. This could be minimized by promoting use of local and marginal materials and industrial by products and green technologies. This lead to both economic and environmental benefits (about 25 percent reduction in construction cost in areas specifically in areas where hard stone is not locally available).

Box- 2.1 Typical climate induced events in the participating states
Bihar: 73 percent area vulnerable to floods with annual flooding accounting for about 30-40 percent of the flood damages in India. Out of its 38 districts, 28 districts get flooded (of which 15 districts are worst affected) causing huge loss of property, lives, farmland and infrastructure
Himachal Pradesh: Mountainous state with many rivers and glaciers covered with natural vegetation. The state is prone to various hazards both natural and manmade such as earthquakes, landslides, cloud burst, flash floods, snow storms and avalanches, draughts, dam failures, fires.
Jharkhand: It is a hilly undulating plateau characterized by predominantly tropical forests. Almost all the 24 districts are affected/ vulnerable to drought, floods, and earthquake.
Meghalaya: Hilly states with high rainfall, involving earthquake, cyclones, floods, landslides, storms
Punjab: The state suffers due to flood and earthquakes also involving desertification and soil erosion
Rajasthan: 60 % of the state falls under the Thar Desert and fall in areas of greatest climate sensitivity involving droughts, hailstorm, sandstorm, heat and cold wave, earthquake, cyclone, and floods,
Uttar Pradesh: Recurring natural disasters such as floods, thunderstorms and squall, droughts, fires, cold waves, and earthquakes in the State over the years have been causing severe damage and adversely affecting human, plant and animal life, property and environment.
Uttarakhand: 93% area is mountainous and 64% is covered by forest including high Himalayan peaks and glaciers. Beside earthquakes, the state is prone to landslides, cloudbursts, flash floods, avalanches, cold waves, and hailstorms.
Tripura: Tripura is characterized by hill ranges, valleys and plains, heavy rains, cyclones, floods, droughts and fires.

Enhancing Resilience and Promoting Green Technologies:

3. The additional financing will support a sector shift towards low carbon and climate resilient path in PMGSY going far beyond that the civil works funded under the additional financing through the following measures:

(i) **Strategic Planning:** The existing rural road network has varied vulnerability to climate induced events due to wide variation in topography, climatic conditions, soil, and geology. The Additional Financing will support quick climate vulnerability mapping at network level to identify the critical road sections and bridges through use of flood maps, hydrological and other data, and quick field surveys. This will help to design suitable resilience measures during design, construction, and maintenance programs to avoid premature failure of the roads and bridges and consequently their costly repairs and reconstruction. This will help addressing the climate resilience issues upfront rather than after the climate induced events have happened and caused big damages.

(ii) The Additional Financing will support establishing "green and climate-resilient strategy for rural roads" for PMGSY as well as for the participating states that will set the direction of integrating these concepts at various stages of project cycle right from planning to engineering practices, business processes, maintenance, and institutional structure. It will also support on-going efforts of NRRDA towards mapping of local soils and marginal materials and industrial by-products to promote their use in road construction.

(iii) ***Design and Construction of Roads under Additional Financing:*** The Additional Financing project will lay special emphasis on the following measures for the Bank financed rural roads and for PMGSY:

- Climate vulnerability assessment during the design process to identify the critical locations affected by floods, water-logging, submergence, cloud bursts, storms, landslides, poor drainage, excessive erosion, high rainfall, and high temperatures.
- Special treatment for flood affected areas through adequate waterways and submersible roads to allow easy passage of water, use of concrete block pavements, and improved drainage;
- Use of environmentally optimized road designs and new technologies which uses local and marginal materials and industrial by-products such as sand, local soils, fly ash, brick kiln wastes, and other similar materials in place of crushed rocks;
- Innovative bridges and culverts through use of pre-fabricated/pre-cast units for roads and bridges having better ability to withstand earthquakes and water forces such as continuous beams, bearing free construction, and river training works;
- Use of hill cutting material in hill roads ensuring its productive use resolving its disposal problem, use of bio-engineering measures, improved drainage and other treatments for landslide prone areas and providing adequate slope protection;

- Improved material specifications for roads and bridges subjected to high rainfall, frequent submergence and water-logging, and water storage dams cum bridges to conserve water in water scarcity areas;
- Road side/ avenue plantation and use of vegetative solution for slope stability and erosion control to increase the green cover that will also work as carbon sink;
- Promoting use of new technologies identified by NRRDA such as (a) cell filled concrete pavement, (b) cold mix technology using bitumen emulsion, and (c) waste plastic in bituminous wearing course;
- Providing adequate embankment in low lying areas; and
- Use of modern equipment such as heavy compaction machinery to improve the compaction of various pavement layers and also their durability and resilience.

(iv) **Revision and modification of technical documents:** The current technical documents do not fully account for the green, low carbon, and climate-resilience construction. The additional financing will support development/refinement of technical documents to address this need including further research and development work to develop new material specifications. Already the Bank is supporting development of a "good practice guide for design and construction of hill roads".

(v) **Asset Management and Maintenance:** The existing rural road network is built without much consideration of climate-resilience. The impact of climatic events is further aggravated due to inadequacies in design and construction and lack of maintenance of the existing network. A poorly maintained network causes big increase in GHG emissions and consumption of road building materials due to costly repairs. The project will support climate vulnerability assessments, retrofitting climate-resilience in existing roads and bridges, and adequate maintenance of rural roads through innovative maintenance contracts to fully integrate climate-resilience in the asset management and maintenance programs.

(vi) **Institutional Capacity:** The knowledge base of the road agency staff and construction industry regarding the use of green and climate-resilient roads and bridges is still low. The project will support specially designed training and capacity building program for the road agency staff, consultants, and contractors to promote the use of green and climate-resilient roads based on the latest knowledge internationally.

Climate opportunities – contributing towards a low carbon rural road development

4. These practices will result in low-carbon rural road development: (i) significant extension of road service life due to enhanced resilience and reduced carbon footprint due to reduced consumption of road building materials during the life cycle of roads; (ii) minimizing losses in asset value due to premature failure and increased fuel efficiency leading to reduced GHG emissions/vehicle-km; (iii) utilizing local sources and innovative designs, minimizing the import of rock aggregates and asphalt quantities over the life-cycle; (iv) reducing energy intensity of road

construction and promoting sustainable growth of infrastructure; and (v) reduction in unit cost of construction due to the optimization of pavement layers and materials.

5. The approaches described in paras. 3-4 above demonstrate that the Additional Financing will integrate climate-resilience and low carbon development considerations into PMGSY.

Project Climate Co-Benefits

6. Both the components under the project have substantial climate Co-Benefits. Under Component A (sub-components A1 and A2), all the 7,000 km rural roads and bridge will be designed to have sufficient resilience towards climate inducted events listed above to avoid their pre-mature failure and ensure their sustainability. Overall and above, about 3,500 km will emphasize on implementing green rural roads strategies that integrate environmentally-optimized, low-carbon, and climate-resilient plans and actions. This includes use of local materials, low-carbon technologies and practices, and climate resilient approaches such as (a) the use of hydrological studies and flood maps as the basis for developing designs and (b) innovative bridges to withstand extreme conditions. The ongoing civil works under the "Original Project" have about 70 percent costs for bitumen and concrete pavements, bridges and culverts, erosion control measures, maintenance for five years, which are essential to ensure their sustainability and ability to withstand climate induced events.

7. Similarly, 4,000 km roads under sub-component A3 also include climate-resilient measures such as use of concrete roads in poorly drained areas, bio-engineering measures for slope protection, adequate waterways in flood affected areas, and adequate pavement structures for existing earth and gravel roads. About 15 percent of these roads are designed using green technologies.

8. Under Component B, the green rural roads strategy will be established for PMGSY and its implementation will be supported as technical assistance. Some associated activities under these sub-components are network level climate vulnerability assessments, developing/modifying existing design and construction standards for roads and bridges to integrate low carbon and climate resilience, research and development to develop green technologies, design of pilot schemes to demonstrate use of low carbon and climate resilient construction, promoting use of clean fuel, integrating climate agenda in asset management and maintenance programs, and building capacity of rural road agencies in use of low carbon and climate resilient designs and construction. This will also include preparation of detailed engineering designs to retrofit climate resilience in existing rural roads and bridges on pilot basis for about 100 km per state.

9. The project will also result in direct savings in 2.68 million tons annually on an average in GHG emissions by improving the road condition through road construction program. In addition, it will help the road agencies in India to substantially minimize GHG emissions by realizing the opportunity to save about US $9 billion annually by way of reduced vehicle operating cost.

Annex-3: Gender Actions

Country: India
Additional Financing for PMGSY Rural Roads Project

Analysis:

1. The labour force participation rate in India is around 40 percent but when broken down by gender, only 24 percent of women participate in the labor force. The participation rate among other BRICS nations is almost twice as high as that of India and in sharp contrast to East Asia and Pacific region which stands at 71 percent. Within India the female labour force participation rate varies substantially—for example, in States such as Bihar, the female labour force participation rate is as low as 9 percent.

2. At the same time female participation in the transport sector in India is negligible—it hovers at about 1 percent of the total workforce employed in the transport sector. This employment gap is the primary gender gap that we fill through the project. Compounding the situation are the cultural norms wherein women work in certain trades only. About 80 percent of the female workforce is based in rural areas which could benefit from PMGSY related construction and maintenance jobs, once suitable opportunities for them are created through women centric work opportunities. Targeted training and capacity building programs for women are also not available in rural areas.

3. Improved roads empower women to access markets, jobs, education and medical facilities, and other social services in addition to helping girls to seek education. Lacking good roads women are restricted to work on farms and on occupation closer to their home. Studies undertaken under the Original Project demonstrates that benefits due to improved roads are not fully availed of by the women due to lack of adequate transport services.

4. Both the national and state government are now pursuing active policies for women empowerment.

Actions:

5. The Additional Financing will support actions to fill the above gender gap by (i) increased employment opportunities for women in construction and maintenance (female employment), (ii) ensuring their effective participation in PMGSY, and (iii) empowering them to better use PMGSY roads through actions such as improved transport services.

6. The Original Project has successfully piloted community based maintenance contracts through women self-help groups in the three states of Uttarakhand, Meghalaya and Himachal Pradesh for routine maintenance of 200 km of PMGSY roads. These were implemented by about 20 self-groups involving 30-50 women in each group. They were provided adequate training, hand-holding support, and required tools under the project. The overall experiences under these pilots have been positive resulting in providing productive employment and increasing non-farm income. These pilots have

demonstrated that there is a latent demand from women for jobs in the transport sector especially in hill areas such as Himachal Pradesh, Meghalaya, Uttarakhand, Tripura where the employment opportunities are limited. In addition, such contracts offer excellent income opportunity to women in addition to fulfilling their house-hold responsibilities as the work could be performed during the free time available to them after meeting their domestic duties.

7. The Additional Financing, will, therefore, mainstream these pilot road maintenance contracts through women self-help groups in other districts and states aiming to cover about 500 km roads over 5 states and expanding further based on the implementation experiences. This would benefit about 50 self-help groups, thus, benefiting about 2,000 women.

8. In addition to the maintenance contracting, the Additional Financing will also support the following:

- Rural transport surveys and analytics with a view to establish the extent of utilization of PMGSY roads by women and girls and identifying complimentary network node actions that would further facilitate utilization of the roads to enable them to access economic opportunities and services like health, education, social welfare;
- Pilot training programs for youth (special focus on women) in road design, field and laboratory investigations, quality assurance, surveying, use of digital tool for data collection and monitoring with an objective to increase their employment prospects in the road sector. This will also include skill enhancement and capacity building of the female staff working in rural road agencies;
- Pilot projects for skilling the road construction and maintenance workers including women with an aim to increase their earning potential; and
- Participation of the women (in addition to men) in project selection, transect walk and community consultations during the process of preparing engineering designs, construction quality monitoring, and implementation 5-year in-built maintenance provision.

Monitoring:

9. To monitor progress towards female employment in rural road maintenance, the Additional Financing will monitor the "number of women benefitted through self-help groups engaged in post-construction maintenance contracts". As explained above the project targets to benefit 2,000 women in this manner.

10. In addition, the Additional Financing will monitor the following:

- Number of women self-help groups involved as micro-enterprises in road maintenance contracts;
- Increased attendance of girls in schools; and
- Number of women and girls having undertaken additional skills and training in design, construction, and maintenance of rural roads.