

**GOVERNMENT OF INDIA**  
**PRADHAN MANTRI GRAM SADAK YOJANA**

**RURAL ROADS PROJECT II**

**Environment and Social Management Framework**

**July 2010**

**National Rural Roads Development Agency**  
**Ministry of Rural Development**

## Abbreviations

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AAV	Aggregate Abrasion Value
BoQ	Bill of Quantities
CD Structures	Cross Drainage Structures
CPCB	Central Pollution Control Board
DPR	Detailed Project Report
ECOP	Environmental Code of Practice
GP	Gram Panchayat
GS	Gram Sabha
GSB	Granular Sub- Grade
HFL	High Flood Level
IRC	Indian Roads Congress
IS	Indian Standards
MoEF	Ministry of Environment and Forest
MoRD	The Ministry of Rural Development
MoRT&H	Ministry of Road Transport and Highways
MoU	Memorandum of Understanding
NOC	No-Objection Certificate
NREGA	National Rural Employment Act
NQM	National Quality Monitor
O & M	Operation and Maintenance
ODR	Other District Roads
OM	Operations Manual
PIU	Programme Implementation Units
PMGSY	Pradhan Mantri Gram Sadak Yojana
POL	Petrol, Oil and Lubricants
PRIs	Panchayat Raj Institutions
PSV	Polished Stone Value
PUC	Pollution Under Control
PWD	Public Works Department
RoW	Right of Way
S W Plains	South West Plains
SP	Special Publications
SPCB	State Pollution Control Board
WBM	Water Bound Macadam

## 1.0 Introduction

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The Ministry of Rural Development (MORD) launched the “Pradhan Mantri Gram Sadak Yojana (PMGSY)” – a Prime Minister’s Rural Road Program in year 2000 to connect with all-weather roads all habitations with population more than 500 (250 in hilly, deserts, and tribal regions) in the first instance. The program is primarily funded by the Government of India through the Central Road Fund (CRF)<sup>1</sup>, and borrowing from multi-lateral agencies. The PMGSY also covers upgrading of existing roads serving to the targeted habitations once the connectivity is achieved for the targeted habitations. The PMGSY targets include new connectivity to about 1,78,000 habitations involving construction of about 3,75,000 km of roads apart from upgrading of 3,72,000 km of existing rural roads (in poor condition) This involves an expenditure of about Rs 1, 330 billion (US \$ 33 billion). It has to be recognized that 161,380 habitations with population below 500 or 250 are not covered under the PMGSY. Further, the Government of India has undertaken building infrastructure in rural areas under the Bharat Nirman Programme. It aims to construct 1,46,185 kms of rural roads to link 66,802 unconnected habitations during 2005-2009. It is also proposed to upgrade 1,94,12 kms of existing through roads to ensure farm-to market connectivity within this time frame.

### PMGSY Targets...

- Achieving all-weather road access to every village/habitation with a population greater than 1000 in the first instance; and
- Providing all-weather road access to all villages/habitations of greater than 500 people (250 in case of hill states and the desert areas) thereafter.

The World Bank through its Country Assistance Strategy commits to a series of loans/credits to support PMGSY. Starting from the Rural Roads Project I (RRP I) approved in 2004 and currently under implementation, the Second Rural Roads Project (RRPII) will be the second World Bank operation to support. The project covers the four states, namely Rajasthan, Himachal Pradesh, Uttar Pradesh and Jharkhand already covered under RRP I. In addition, three new states (Punjab, Uttarakhand and Meghalaya) have been proposed under RRP II.

The Indian Roads Congress (IRC) publication, IRC: SP: 20-2002, Rural Roads Manual, provides guidance on various aspects of rural road development, with the specific requirements of PMGSY. Further to this an Operations Manual (OM) has been prepared to bring about clarity on various aspects of PMGSY and thereby ensure its timely and successful implementation.

Towards enhancing the assessment and management of environmental and social issues in PMGSY planning and implementation, an Environmental and Social Management Framework (ESMF) had been prepared for RRP I and is being currently applied and implemented in the on-going World Bank funded RRP I.

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<sup>1</sup> 50% of the Rs 2 per litre cess on the sale of diesel has been earmarked for rural roads under the CRF

The ESMF comprises of the following safeguard instruments:

- (i) Environmental and Social Management Framework (ESMF) (this document);
- (ii) Social Management (Resettlement and Participation) Framework and
- (iii) Environmental Codes of Practice (ECoP).

These documents together are referred as ESMF in the report.

### **Customization of Environment and Social Management Framework for RRP II**

In order to prepare a document that provides for a comprehensive management framework to avoid, minimize and mitigate environmental and social issues in the process of planning/designing, constructing and operating rural roads, a three-tier approach comprising the following has been adopted:

- ⊙ Review of environmental profile of the project states
- ⊙ Consultations with Stakeholders
- ⊙ Use of field/practical experience gained from RRP I implementation

Based on the consultation and reviews, a consensus on the following three key aspects was arrived:

- ⊙ The Environmental and Social Management Framework used for RRP I is largely relevant for RRP II. The framework can be adopted for RRP II with a few modifications, primarily guided by the experience gained through implementation of RRP I.
- ⊙ Up-dating of ECOP with particular need for strengthening ECOPs related to slope stability and biodiversity management
- ⊙ Strengthening the environmental management capacity both at national and state level

The provisions under the framework have been drafted in accordance with the applicable statutory provisions of Government of India and for compliance with the World Bank Policies. Certain provisions to address the environmental issues are already present within the existing codes/specifications. In case of conflict of the provisions mentioned in this ECoP with the existing codes/specifications, the existing codes/specifications shall prevail.

## **2.0 Legislations and Policies Applicable**

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### **2.1 Legal provisions - Environmental Management**

The Legislations of Government of India (GoI) applicable for PMGSY regarding environmental aspects and applicable safeguard policies for RRP II are summarized in the following sections.

#### **i) Environmental Clearance from MoEF**

In September 2006, a notification was issued by MoEF amending EIA Notification, 1994 that lists projects requiring Environmental Clearance and process of securing the clearance. Rural Roads are not included in this notification. However, roads traversing ecologically sensitive areas such as National Parks, Sanctuaries, Tiger Reserve, and Reserve Forests etc. would require Environmental and/or forest clearance, as may be applicable

**Applicability:** As a rule, all sub-projects are exempted from environmental clearance except the roads passing through ecologically sensitive areas.

#### **ii) Forest Clearances**

The Forest (Conservation) Act 1980, (as amended 1998) pertains to the cases of diversion of forest area and felling of roadside plantation.

**Applicability:** Restrictions and clearance procedure proposed in the Forest (Conservation) Act applies wholly to the sub-projects requiring diversion of natural forest areas, even in case the protected/designated forest area does not have any vegetation cover.

#### **iii) The Wildlife (Protection) Act, 1972**

The Wildlife (Protection) Act Provides for the protection of wild animals' birds and plants and for matters connected therewith.

**Applicability:** Restrictions/protection measures and clearance procedures proposed in the Wildlife (Protection) Act applies to the sub-projects passing through identified/notified wildlife protection areas, including sanctuaries.

#### **iv) Water (Prevention and Control of Pollution) Act 1974, as amended 1988.**

The Water (Prevention and Control of Pollution) Act 1974 is enacted to prevent pollution of water sources through the industrial or any other construction activity and for maintaining or restoring of wholesomeness of water.

**Applicability:** Project includes setting up of worker's camp and other construction equipment. The Contractor needs to take consent for setting up and also consent for operation of the equipment/worker's camp.

## **V) Air (prevention and control of pollution) Act as amended in 1987**

The Air (prevention and control of pollution) Act is enacted to prevent and control air pollution. The Emission and air pollutants standards are prescribed under this Act.

**Applicability:** Project includes setting up of Hot-mix plants, aggregate crushing plants and other construction vehicles and equipment. The Contractor needs to take consent for setting up HMP and crushing sites. The Vehicles and equipment to confirm to emission standards

### **vi) Noise Pollution (Regulation and Control) rules 2000**

The Noise Pollution (Regulation and Control) rules are promulgated under Environmental (protection) Act, 1986.

**Applicability:** The referred rules will be applicable for meeting noise pollution standards during construction activities at different type of land uses.

### **vii) Ancient Monuments and Archaeological sites & Remains Act, 1958**

Provisions of the Act include Conservation of Cultural and Historical remains found in the project area.

**Applicability:** The provisions of the Act need to be considered during sub-project planning and designing to ensure that any ancient monuments and archeological sites of importance are not affected due to the proposed project road. In addition, all the construction related activities shall necessarily avoid such sites.

## **2.2. Information Disclosure**

### **Right to Information (RTI) Act, 2005**

This Act relate to public access to information under the control of public authorities. Act has provisions access to information held by or under the control of any public authority and includes: (i) the right to: Inspection of work, documents, records; (ii) taking notes, extracts or certified copies of documents or records; (iii) taking certified samples of material'; (iv) obtaining information in the form of diskettes, floppies, tapes, video cassettes or in any other electronic mode or through printouts where such information is stored in a computer or in any other device.

**Applicability:** It empowers people to obtain information on the project. To facilitate project stakeholders obtain requisite project information. PMGSY provides for dissemination of information and procedures, entitlements, project costs, selection criteria for contractor etc. In addition, the state and central agencies involved in implementing RRP-II shall be open to provide information on public demand

## 2.3 Applicable World Bank Safeguard Policies

The World Bank's safeguard policies applicable to the project, are detailed below.

**Table 2-1: Applicable World Bank Environmental Safeguard Policies**

<b>S. No</b>	<b>World Bank Policy</b>	<b>Applicability due to</b>	<b>How Project Address Policy Requirements?</b>
1.	Environmental Assessment OP 4.01	Project is likely to have impacts on environmental and social components such as on water bodies, existing slopes in case of hilly areas and trees along the road	Preparation and application of Environmental Codes of Practice for addressing environmental issues.
2.	Natural Habitats OP 4.04	Some sub-projects (about 1 percent) are likely to be in/close to sensitive natural habitats	Avoidance measures, including non-inclusion of such sub-projects in the project.
3.	Forest OP 4.36	Some sub-projects are likely to be in/close to forest areas and may need forest land diversion, particularly in the hill states	Preparation of a management plan to address impacts, if any and avoidance/minimization of construction and allied activities in forest areas.
4.	Cultural Properties OP4.11	The project entail risk/damage to cultural properties and has likelihood of chance-finds.	Provisions made for relocation of cultural properties and protection of the same through design modifications and other measures.

Apart from compliance to the above policies, the project will comply with the bank procedure, BP17.50. Disclosure shall be carried out at all stages of the project as at planning stage, prioritization stage, project preparation stage and implementation stages. The core network shall be displayed at the project planning stage and project information brochure shall be distributed at the prioritization and project preparation stages. Consultations shall be conducted with the community and the PRI at project preparation and implementation stages.

### **3.0 Environmental Issues and Management Measures**

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Options to address the various environmental issues identified have been worked out based on review of good practices and compliance to the legal provisions. The identification and assessment of issues carried out under RRP I has been used as a basis for framing/modifying management measures. Inputs from the key stakeholders, including the executing agencies and the line agencies were also used for the said purpose.

#### **3.1 Screening of Sub-projects**

A screening and review process for identification of sensitive sub-projects with respect to environmental issues has been worked out. The screening exercise shall be carried out by the PIUs prior to initiation of the DPR activities. The screening exercise shall be a useful tool to identify the environmental issues, and thereby integrate them into the project preparation, and not as an exclusion criterion for avoiding environmental impacts. The screening criteria include factors/aspects such as:

- Sensitive areas, natural habitats, protected areas
- Felling of trees outside the protected areas
- Clearance of vegetative cover
- Loss of productive agricultural land
- Cuts across perennial streams or surface water bodies
- Vulnerability to natural hazards, land slides/slips and,
- Environmental features as marshy areas, sand dunes etc

The screening shall enable categorization of sub-projects based on their environmental sensitivity as follows:

- (i) Sub-projects, wherein no significant adverse environmental impacts are expected:
  - ⊙ The environmental impacts will be of the type normally associated with standard rural road construction.
  - ⊙ The measures suggested in the ECoP shall be adequate to address the general environmental issues likely in these sub-projects.
- (ii) Sub-projects, wherein there is a potential for significant adverse environmental impacts:

There is a likelihood of adverse impacts requiring specific interventions such as roads passing through forests, sanctuaries and thereby requiring additional environmental analysis. In such cases:



- ⊙ Sub-projects traversing through sensitive natural habitats will be identified and assessed in terms of their impacts. Sub-project/s where adverse impacts are anticipated, will not be included under the project
- ⊙ If the sub-project assessment in cases located close to sensitive habitats reveals that impacts can be avoided/mitigated, a management plan will be prepared in line with ECoP 19.
- ⊙ Vulnerability to natural hazards, land slides/slips will be assessed and relevant ECoPs will be applied.
- ⊙ In addition to the application of ECoPs, the PIU shall undertake the particular road improvement work in compliance with the statutory/regulatory provisions, as applicable.

### 3.2 Environmental Codes of Practice (ECoP)

The ECoPs have been developed to guide the planning, design, construction and maintenance stages of PMGSY in terms of avoidance or mitigation of the adverse environmental impacts that may result from the projects. The codes define methods and procedures to be followed by the Executing Agencies, Contractors and other agencies involved in the three project states. The scope of the ECoPs is outlined in the Box given here.

The list of ECoPs prepared and their coverage is presented in Table 3-1. Checklist for checking the DPR preparation and for identifying issues to be addressed in pre-construction, construction and post-construction stages will be as per the ECoPs.

Implementation of environmental measures shall be monitored through the environmental audit procedures provided in ECoPs. This includes format for reporting the addressal of issues in various stages of the project.

#### Scope of Environmental Codes of Practice

- ⊙ To form a field guide manual to the planners. Field engineers and contractors to.
- ⊙ Identify project activities that can have potential environmental impacts and to provide mitigation measures
- ⊙ Demonstrate road design and construction practices that are cost-effective and address environmental impacts
- ⊙ Illustrate recommended practices to address the environmental concerns during project planning implementation and operation
- ⊙ Define role of involvement of the rural communities at different stages of the project. and.
- ⊙ Achieve PMGSY objectives of rural connectivity through roads planned and constructed to blend with the natural surroundings.

**Table 3-1: Environmental Codes of Practice and their Coverage**

<b>ECoP</b>	<b>Title</b>	<b>Key Issues Addressed</b>
ECoP 1.0	Project Planning & Design	<ul style="list-style-type: none"><li>◦ Incorporation of environmental concerns in project preparation to avoid impacts in construction and operation stages</li><li>◦ Avoidance of roads through sensitive areas as reserved forests/sanctuaries/wetlands etc</li><li>◦ Compliance with legal requirements</li><li>◦ Devising enhancement measures into project design</li></ul>
ECoP 2.0	Site Preparation	<ul style="list-style-type: none"><li>◦ Relocation of utilities, common property resources and cultural properties</li><li>◦ Avoidance of affect on roadside vegetation</li></ul>
ECoP 3.0	Construction Camps	<ul style="list-style-type: none"><li>◦ Avoidance of sensitive areas for location of construction camps</li><li>◦ Infrastructure arrangements for workers and construction equipment</li></ul>
ECoP 4.0	Alternate Materials for Construction	<ul style="list-style-type: none"><li>◦ Use of fly ash as per MoEF Notification</li><li>◦ Minimizing earth requirement</li></ul>
ECoP 5.0	Borrow Areas	<ul style="list-style-type: none"><li>◦ Avoidance of agriculture lands</li><li>◦ Redevelopment of borrow areas</li></ul>
ECoP 6.0	Topsoil Salvage, Storage & Replacement	<ul style="list-style-type: none"><li>◦ Topsoil removal from areas temporarily/permanently used for construction</li><li>◦ Storage of topsoil in stockpiles and protection from erosion</li><li>◦ Reuse of topsoil at areas to be revegetated and in agriculture lands</li></ul>
ECoP 7.0	Quarry Management	<ul style="list-style-type: none"><li>◦ Redevelopment of quarries in case new quarries are setup for the project</li></ul>
ECoP 8.0	Water Costruction	<ul style="list-style-type: none"><li>◦ Extraction of water in water scarce areas with consent of community</li><li>◦ Scheduling construction activities as per water availability</li></ul>

<b>ECoP</b>	<b>Title</b>	<b>Key Issues Addressed</b>
ECoP 9.0	Slope Stability and Erosion Control	<ul style="list-style-type: none"> <li>◦ Slope stability along hill roads</li> <li>◦ Protection of land on hill side from stability loss due to cutting</li> <li>◦ Protection of lands on valley side from debris due to construction</li> <li>◦ Adequacy of drainage for erosion control</li> </ul>
ECoP 10.0	Waste Management	<ul style="list-style-type: none"> <li>◦ Reuse of cut material in hill roads</li> <li>◦ Safe disposal of wastes</li> </ul>
ECoP 11.0	Water Bodies	<ul style="list-style-type: none"> <li>◦ Avoidance from cutting due to alignment</li> <li>◦ Protection of embankment slopes in case of alignment on embankments</li> <li>◦ Rehabilitation of water body</li> </ul>
ECoP 12.0	Drainage	<ul style="list-style-type: none"> <li>◦ Conduct of hydrological investigations during project preparation</li> <li>◦ Provision of longitudinal and cross drainage as per requirements</li> <li>◦ Proper location of drainage outfall</li> </ul>
ECoP 13.0	Construction Plants and Equipment Management	<ul style="list-style-type: none"> <li>◦ Compliance of construction plants and equipment with emission standards of Central Pollution Control Board</li> <li>◦ Maintenance of machinery and equipment to avoid pollution</li> </ul>
ECoP 14.0	Public and Worker's Health & Safety	<ul style="list-style-type: none"> <li>◦ Provision of Personal Protective Equipment to workers</li> <li>◦ Provision of basic necessities to workers</li> <li>◦ Public safety while travel along construction sites</li> <li>◦ Public safety during operation of the road</li> </ul>
ECoP 15.0	Cultural Properties	<ul style="list-style-type: none"> <li>◦ Avoidance of impacts due to project</li> <li>◦ Protection of precincts from impacts due to construction</li> <li>◦ Relocation in case impacts are unavoidable</li> </ul>
ECoP 16.0	Tree Plantation	<ul style="list-style-type: none"> <li>◦ Avoidance of impact on trees</li> <li>◦ Plantation of trees on roadside</li> </ul>

<b>ECoP</b>	<b>Title</b>	<b>Key Issues Addressed</b>
ECoP 17.0	Managing Induced Development	<ul style="list-style-type: none"> <li>◦ Restricting ribbon development at junctions and bus stops</li> <li>◦ Earmarking areas for commercial activities and other amenities</li> </ul>
ECoP 18.0	Environmental Audit	<ul style="list-style-type: none"> <li>◦ Monitoring of environmental and social parameters during project planning, construction and implementation</li> </ul>
ECoP 19.0	Natural Habitats	<ul style="list-style-type: none"> <li>◦ Identification of natural habitats</li> <li>◦ Management measures for roads passing through natural habitats</li> <li>◦ Structure of management plan</li> </ul>
ECoP 19 A	Biodiversity	<ul style="list-style-type: none"> <li>◦ Provisions to address biodiversity issues, in addition to provisions provided for protecting Natural Habitats as per ECoP – 19.0</li> </ul>
ECoP 20.0	Consultation Framework	<ul style="list-style-type: none"> <li>◦ Aspects for consultation</li> <li>◦ Stage wise consultations</li> <li>◦ Consultation schedule and responsibilities</li> </ul>

## **4. Implementation Arrangements**

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### **4.1 Institutional Structure**

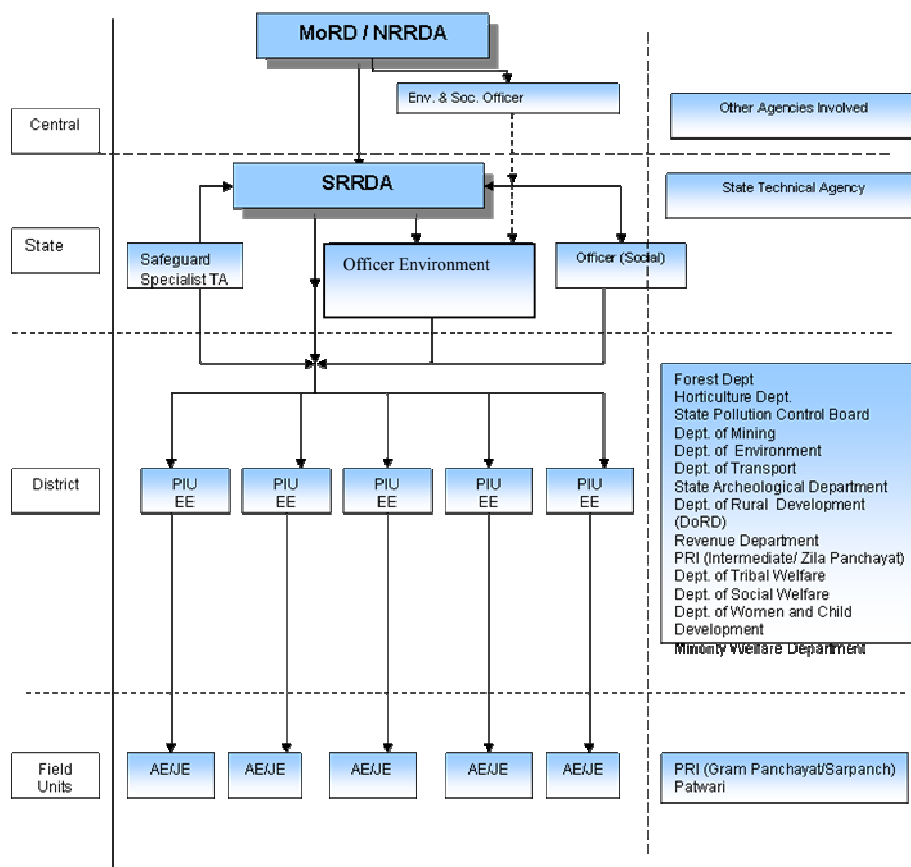
At national level, NRRDA shall have a designated Environment and Social Officer who will provide overall guidance and coordination for effective implementation of EMF/ECOP and SMF by the participating states.

The State Rural Road Development Agency will be the executing agency for PMGSY at the state level. The PIU, at the districts, will have the responsibility of coordinating and implementing the provisions of the ESMF provisions along with the other project components.

Towards implementation of the ESMF, designated officers in SRRDA shall be responsible to implement the ESMF provision sin the State. These officers shall assist, advise the Nodal Officer and interact with the PIU in implementation of ESMF provisions.

Current PMGSY arrangement of clearance of technical proposals by State Technical Agency (STA) also will include review and clearance responsibility of compliance with EMF/ECOP provisions. To this effect, the training and capacity building programs under RRP-II will involve STAs for better understanding of provisions under ESMF.

An independent Consultant shall be appointed in each of the project states to regularly monitor the planning, design and construction of Bank financed rural road works and to confirm that actions taken at each stage of the sub project cycle are in compliance with agreed procedures and standards. To address and effective implementation of the ESMF provisions, a position of a Safeguard Specialist is proposed in the team of TE/SC. The overall institutional structure suggested is presented in Figure- 4.1.



The PIU through the AE/JE will implement all the tasks at the field level with the assistance and participation of PRIs (Sarpanch and other panchayat/ward members, etc). Each PIU will delegate responsibility to identified field engineer for providing inputs on environmental and social aspects. The designated engineer will also coordinate effective implementation of ECOP provisions. The role and responsibility of each of the agency / official involved are presented in section 4.1.2.

#### 4.1.2 Roles and Responsibilities of Designated Officers

##### i) Environmental and Social (E&S) Nodal Officer at NRRDA

The roles and responsibilities of the E&S nodal officer will include:

- ⊙ Provide guidance in complying with ESMF provisions by the three participating states of RRP-II
- ⊙ Coordinate with STAs to ensure the DPR clearances will also consider ESMF compliance status
- ⊙ Monitor PMGSY roads for fulfillment of ESMF provisions in co-ordination with the SRRDAs

- ⊙ Facilitate conduct of Environmental Audit as per ECoP-18
- ⊙ Facilitate national and state level training and capacity building programs

**ii) Environmental Nodal at SRRDA**

The roles and responsibilities of the Environmental nodal officer shall include:

- ⊙ Coordinate planning and implementation of Environmental aspects of PMGSY in the state;
- ⊙ Obtain clearances from the line departments especially MoEF and Forest Department;
- ⊙ Monitor PMGSY roads for fulfillment of ESMF provisions in co-ordination with the TE/Supervision consultants;
- ⊙ Coordinate with agencies for ensuring implementation of EcoP;
- ⊙ Mobilize community and ensure their participation in addressing EcoP provisions and issues as
- ⊙ Induced Development and tree plantation; and
- ⊙ Report progress, highlighting environmental issues not addressed, to provide for course correction in subsequent projects

**iii) Safeguard Specialist Independent Consultant**

The Safeguard Specialist shall be responsible for ensuring:

- ⊙ Proper application of environmental, social and techno-economic screening procedures for the selection of rural roads sub-projects;
- ⊙ Detailed design is in compliance with agreed technical standards as well as stipulated environmental and social management measures; and,
- ⊙ Compliance of actual works with contract conditions and quality assurance procedures as well as agreed environmental and social management measures, and,
- ⊙ Sensitizing and capacity building of the PIU officials, the PRI representatives towards implementation of the ESMF provisions.

**4.1.3 Training Plan**

Implementation staff of PMGSY would need to be oriented towards environmental management. A three tier-training plan is prepared to orient the staff at state level, district level and field level towards implementation of ESMF. The training plan with the mode of training and target groups along with the duration is presented in the Table 4-1.

**Table 4-1: Training Plan**  
(common program for effective implementation of ESMF, ECoPs and SMF)

Module	Description	Participants	Form of Training	Level	Duration
<b>Module 1</b>					
Session I	Basic Concept of EMF Screening of corridors Environmental & Social Concerns in PMGSY	MoRD, NRRDA, Chief Engineers (CE), Superintending Engineers (SE), Executive Engineers (EE) State PIU, Revenue Department, Forest Department, Technical Examiner/Supervision Consultants	Workshop	State	One Working day
Session II	Basic Concepts of Social Management and Participation Framework Provisions of ECoP Provisions of Social Management Framework Delivery of entitlements Social Accountability	MoRD, NRRDA, Chief Engineers (CE), Superintending Engineers (SE), Senior Executive Engineers and (EE) of PIU, Revenue Department, Forest Department, Technical Examiner/Supervision Consultants			
<b>Module II</b>					
Session I	Basic Concept of EMF Transect Walk ECoP Provisions and Applicability Preparation of BoQ Integrating EMF provisions into DPR Role and Responsibility Monitoring Mechanism	Executive Engineers (EE), Senior Assistant Engineers (AE) of PIU, Technical Examiner/Supervision Consultants	Lecture	District	One Working Day
Session II	Basic Concepts of SMF and Participation Framework Profile of PAPs	Executive Engineers (EE) & Senior Assistant Engineers (AE) of PIU,	Lecture	District	One Working Day



Module	Description	Participants	Form of Training	Level	Duration
	Identification of Vulnerable PAPs Voluntary Land Donation Integrating social concerns in DPR Role and Responsibility, delivery of entitlement Social accountability/community feedback Redressal Mechanism	Technical Examiner/Supervision Consultants			
<b>Module III</b>					
Session I	Identification of Environmental Concerns during construction stage ECoP provisions and its Implementation Reporting formats	Assistant Engineers (AE), Junior Engineer (JE) of PIU, Technical Examiner/Supervision Consultants	Field based lectures	District	Two Working days which focuses on field works and operationalization
Session II	Identification of Social concerns Grievance Redressal mechanism with the provisions of R&R framework Methodology for land transfer Delivery of entitlements Social Accountability/community feedback	Assistant Engineers (AE), Junior Engineer (JE) of PIU, Technical Examiner/Supervision Consultants	Lecture	District	
Session III	Institutional Setup Roles and Responsibilities of officials/ contractors/ consultants/ Technical Examiner towards protection of environment Monitoring mechanisms Reporting requirements with targets	Assistant Engineers (AE), Junior Engineers (JE) of PIU, Contractor, Sarpanch	Interactive Session	District	

## 5. Guide to Application of ECoPs

The implementation of the measures suggested in the Safeguard instruments shall be in conjunction with the provisions of the Operations Manual (OM). To institutionalize the ESMF provisions into the project stages as laid down in the OM, the ESMF shall be appended to the OM in the form of Supplemental Operations Manual and references to the corresponding ESMF provisions during different stages. Table 5-1 provides a list of sections in the OM where the ESMF needs to be referred. The sequential process of project planning, design and implementation of PMGSY sub-projects as determined in the OM and the corresponding ESMF linkages to these stages are specified in Figure 5-1.

**Table 5-1: Project process as per Operational Manual and corresponding ESMF provisions**

Chapter of OM		OM Section		Corresponding ESMF Provisions
No.	Title	No.	Title	
3	Annual proposals and their clearances	3.2	Proposals	Screening criteria for selection of roads, ECoP-1.0 “project Planning & Design”
		3.4.4	Guidelines for preparing DPR	All ECoP and Resettlement & Participatory Framework Formats as given in Table 7-1.
4	Design	4.1	Route selection and alignment	Annexure 2 of R&PF “Methodology for Conducting Transect Walk” and Format 5 of Information Dissemination “Guidance Note for Transect Walk”, ECoP 1.0 “Project Planning & Design”
		4.2	Geometric design standards	ECoP – 1.0 “Project Planning & Design”
		4.3	Topographical & related ground surveys	Annexure 2 of R&PF “Methodology for Conducting Transect Walk” and Format 5 of Information Dissemination “Guidance Note for Transect Walk”, Annexure 3 of R&PF “Methodology & Format for Community Consultation, Annexure 4 of R&PF on Census Survey, ECoP 1.0 “Project Planning & Design”
		4.8	Use of local materials	ECoP 4.0 “Alternate Materials for Construction” and Annexure 4.1, 8.1 & 10.1 for MoUs/LoC/NoC for Use of local materials
5	Project Preparation	5.2	Detailed Project Report (DPR)	All ECoP and Resettlement & Participatory Framework Formats as given in Table 7-1.

Chapter of OM		OM Section		Corresponding ESMF Provisions
No.	Title	No.	Title	
		5.3	Drawings	Construction camp drawing as per ECoP 3.0 “Construction Camp”  Rehabilitation Plan for Borrow Area, ECoP 5.0 “Borrow Areas”  Measures for protection of water bodies, ECoP 11.0. “Water Bodies”  Relocation drawing of cultural property, ECoP 15.0 “Cultural Properties”  Transect Walk Map with alignment on Revenue Map, Annexure 2 of R&PF
		5.7	Estimates	To be prepared by PIU as per design based on typical drawings of ECoP 3.0, ECoP 5.0 , ECoP 11.0, ECoP 15.0 and Sub-Project Budget
		5.8	Analysis of Rates	To be prepared by PIU for items provided in BoQs in ECoPs not available in Standard Schedule of Rates. Reference: ECoP 3.0, ECoP 5.0, ECoP 11.0, ECoP 15.0
		5.9	Environmental Management	All provisions of ESMF and R&PF
6	Scrutiny of DPR	6.2	Preparation of DPRs by PIU	Checklist of DPR preparation, ECoP 1.0 “Project Planning & Design”.
8	Project Implementation and Contract Management	8.1	State level agencies	Designating the responsibility of environmental management to Environmental Officer, ESMF 7.0 “Implementation Arrangements”
		8.3	Steps involved in implementation	Seeking consent letters by contractor as per ECoPs, MoUs for land Transfer as per Annexure 5 of R&PF
		8.8	Work programme	Scheduling work programme as per ECoP 1.0 “Project Planning & Design”, Format 10 of Information Dissemination
		8.14	Payments & certificates	Final Payment after issue of certificates for completion of rehabilitation of land temporarily used for construction activities as per ECoPs

Chapter of OM		OM Section		Corresponding ESMF Provisions
No.	Title	No.	Title	
14	Road Safety	14.2	Engineering measures	All provisions of ECoP 14.0 “Public & Worker’s health and Safety, Format 10 of Information Dissemination
		14.3	Safety during construction	
		14.4	Road safety awareness	
15	Implementation Responsibility		Table 13.1	Audit responsibilities as per ECoP 18.0 “Environmental Audit

## 5.1 Project Cycle: Sub-Project Details

The entire project cycle or process is divided into five phases of work:

- ⊙ **Corridor Prioritization** encompasses tasks related to the prioritization of the project corridors through preparation and approval of the District Rural Road Plan and the PMGSY road under the core network. The PMGSY road under core network details are shall be disclosed to the community subsequent to its finalization at the District, Block and concerned Gram Panchayats. Roads out of the PMGSY road under core network shall be prioritized for implementation in each year
- ⊙ **Project Planning and Design:** The planning and design phases involves:
  - First task involves, finalization of alignment, inventorization of social including sites for land accretion<sup>2</sup> and environmental features, considering aspects of road safety and scope for future growth, consultation with the land owners/community and identification of likely PAPs through community planning during transect walk.
  - Second task involves design of road geometrics and enhancement measures based on the outcome of the first task and preparation of Detailed Project Report (DPR)
- ⊙ **Site Preparation** process involves mobilization of contractor that includes setting up of site, signing of MOU/NOC/LOC, site clearance, etc. During this stage, the contractor will organize consultations with the community and migrant laborers to discuss temporary impacts during construction including safety and the work schedule. It is only after the physical possession of land and MOUs for use of local resources that the mobilization of machinery will start on site.

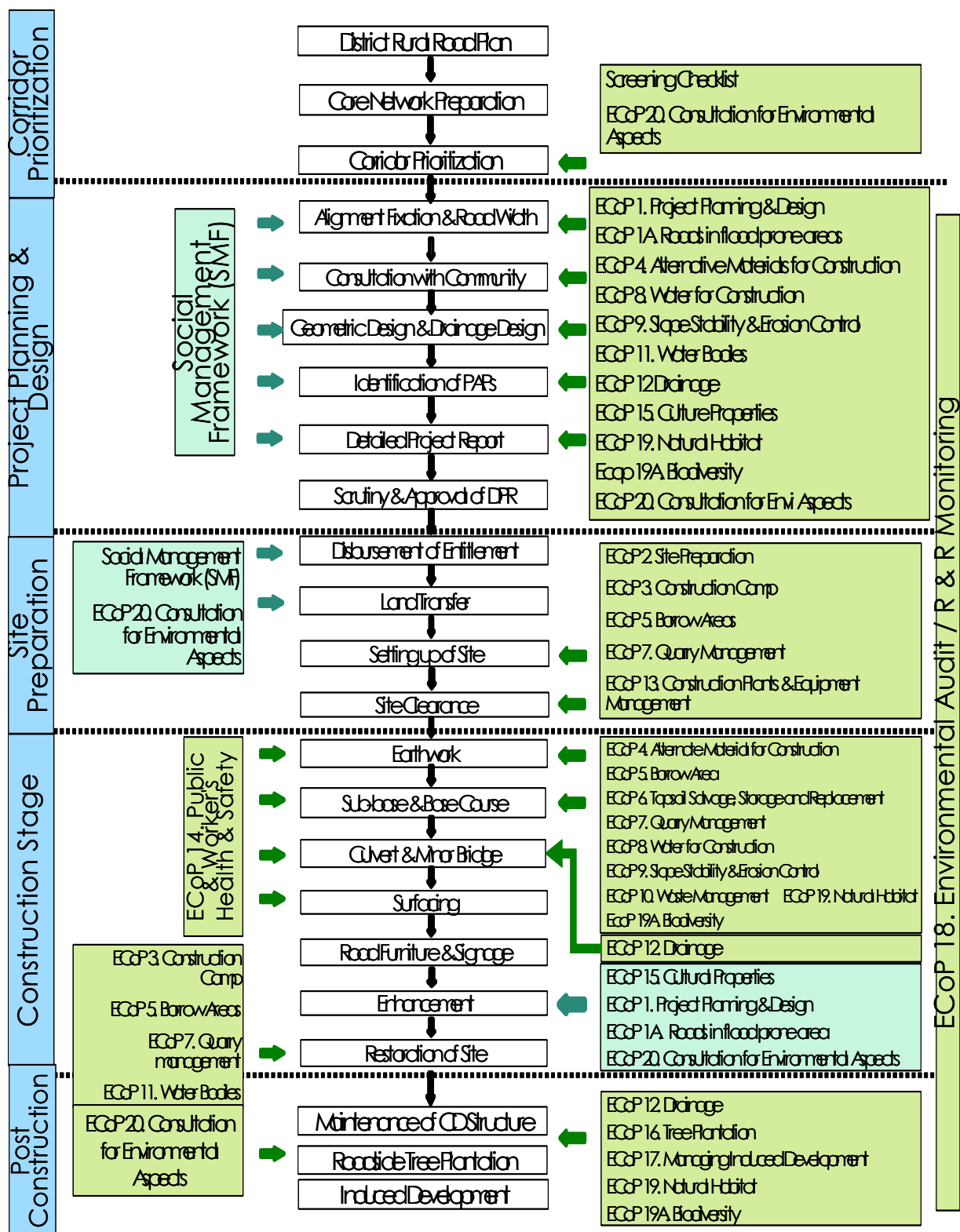
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<sup>2</sup> Refer SMF, a separate volume for the details

- ⊙ **Construction Stage:** The stage involves where actual construction of PMGSY Road begins. The stage includes earthwork, sub-base and base course, construction of culverts and drains, etc. with main focus on public and worker safety. Monitoring plays the important role in this stage to ensure all measures are followed as per the contract document, which includes DPR.
- ⊙ **Post Construction Stage:** The post construction scenario tasks include Reclamation of temporary used land for disposal of waste, storage of material, etc.; borrow areas, water bodies; etc. The reclamation shall be considered complete only after the contractor secures a certificate of completion from the land owner. The other tasks that need to be undertaken by the Gram Panchayats include managing the induced development and tree plantation.

The detailed PMGSY process outline and corresponding EMF provisions and application of ECOP are presented in Figure 5-1 and Table 5-2 respectively. The responsible agency/official involved, time frame, etc. is presented in Table 5-1.

Figure 5-1: PMGSY Process Outline and Corresponding ECOP Provisions



**Table 5-2: ESMF Tasks and Implementing Agency**

Project Stage	Task	Target Group	Responsibility	Time Frame
1. Corridor Prioritization Stage	Dissemination of PMGSY Roads under Core network	Community	PIU (EE/AE), ZP, GP/VC	After Approval of Core Network
	Selection of Roads	-	PIU (EE/AE), GP/VC, Revenue Department	First Week of DPR Preparation
2. Project Planning and Design Stage				
i. DPR Preparation Stage	Dissemination of Project Information	Community	PIU (EE/AE), GP/VC	First Week of DPR Preparation
	Sensitization of Community	Community	PIU (EE/AE), GP/VC (Sarpanch & Ward Members)	First Week of DPR Preparation
	Finalization of Alignment (Transect Walk, Alignment Shifts incorporating community suggestions)	Community	PIU (EE/AE), GP/VC (Sarpanch & Ward Members), Revenue Dept and others	First month of DPR Preparation
	Geometric Design & Drainage Design	Community	PIU (AE/JE)	-
	Marking of Alignment	-	PIU (EE/AE), GP/VC (Sarpanch & Ward Members), Revenue Dept and others	12 <sup>th</sup> Week of DPR Preparation
	Scrutiny and Approval of DPR	-	Technical Examiner/Supervision Consultants	-
	DPR Auditing	-	PIU/TE/CSC	-

Project Stage	Task	Target Group	Responsibility	Time Frame
3. Implementation Stage				
i). Site Preparation Stage	Collection of MoU Affidavits	PAPs	PIU (EE/AE), GP/VC (Sarpanch & Ward Members), Revenue Dept	First month of Implementation after approval of DPR
	Relocation/shifting of common property resources	Community/PAPs	PIU (EE/AE), GP/VC (Sarpanch & Ward Members)	By end of 2nd month of Implementation after approval of DPR
ii). Construction Stage	Temporary impacts during construction	Community	GP/VC, Contractor	From 4th month of project Implementation, till completion of construction work
	Health Impacts including HIV/AIDS	Community	GP/VC, Contractor, PHC, DACS	From 4th month of project Implementation, till completion of construction work
	Setting up of Site	-	Contractor	First month of Implementation after approval of DPR
	Redressal of Grievances	Community/PAPs	PIU (EE/AE), GP/VC (Sarpanch & Ward Members), Revenue Dept	Through out project cycle
	Unforeseen Impacts	Community	PIU (EE/AE), GP/VC (Sarpanch & Ward Members), Revenue Dept, Contractor	From 4th month of project Implementation, till completion of construction work
	MoUs for use of local resources	Community	Contractor, GP/VC (Sarpanch)	From 4th month of project Implementation, till completion of construction work
	Monitoring of Construction Work		Auditor, PIU (EE/AE)	



Project Stage	Task	Target Group	Responsibility	Time Frame
iii). Post construction Stage	Reclamation of Temporary used land borrow areas, water body and cultural property	Community	Contractor	-
	Tree Plantation	Community	GP/VC (Sarpanch, ward members) Community	-
	Managing Induced development	Community	GP/VC (Sarpanch, ward members)	-
	Monitoring Progress		PIU (EE/AE)	Through out project cycle
	Project evaluation	Community/PAPs	PIU and GP/VC	After project completion

PIU : Project Implementation Unit; GP/VC: Gram Panchayat/Village Council; ZP: Zilla Panchayat; RD: Renue Department; DRDA: District Rural Development Agency; DoRD: Department of Rural Development; DACS: District AIDS Control Society; PHC: Primary Health Centre; and TE: Technical Examiner

## References

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1. Rural Road Manual, IRC: SP: 20-2002, Indian Road Congress (IRC) Publications, 2002
2. Hill Road Manual, IRC: SP: 48-1998, Indian Road Congress (IRC) Publications, 1998
3. Keller, G.; Sherar J.; Best Management Practice Field Guide, Low-Volume Roads Engineering, US Agency for International Development (USAID), Washington, DC. May, 2003.
4. General Conditions of Contract for Central P.W.D. Works, A Government of India Publication, 2003
5. Utilization of Fly Ash, Ministry of Environmental and Forest (MoEF) Notification, S.O. 1164 (E), The Gazette of India, Extraordinary Part II, Section 3, Sub-section (ii), Ministry of Environment and Forest, 5<sup>th</sup> November, 2002.
6. Steel Slag, Turner-FairBank Highway Research Center (online). [Cited 24<sup>th</sup> September 2003] Available from World Wide Web: <http://www.tfhrc.gov/hnr20/recycle/waste/ssa2.htm>.
7. Siddharth, P., Gainful Utilization of Marble Waste, An Effort towards protection of Ecology & Environment (Online), [Cited 25<sup>th</sup> September 2003] Available from World Wide Web: <http://www.cdos-india.com/papers/18%20-%20Gainful%20Utilization%20of%20Marble%20Wast%20-%20Siddharth%20Pareek.doc>
8. Recommended Practice for Borrow Pits for Road Embankment Constructed by Manual Operation, IRC: 10-1961, Indian Road Congress (IRC) Publication, 1961
9. Permanent Vegetation, CODE 880, Illinois Urban Manual Practice Standard, (online), [Cited on 10<sup>th</sup> October 2003], Available from World Wide Web: <http://www.il.nrcs.usda.gov/engineer/urban/Standards/urbst880.htm>
10. Chilibeck, B., Chislett, G., Norris G., Land Development Guideline for the Protection of Aquatic Habitat, The Habitat Management Division of Fisheries and Ocean and The Integrated Branch of The Ministry of Environment, Land and Parks, Government of Canada, September 1993.(Online), [Cited on 19<sup>th</sup> September 2003], Available from the Worldwide Web: [http://collection.nlc-bnc.ca/100/200/301/dfo-mpo/land\\_development\\_guidelines/165353.pdf](http://collection.nlc-bnc.ca/100/200/301/dfo-mpo/land_development_guidelines/165353.pdf).
11. Water, Clause 1010, Materials for Structures, Section 1000, Specification for Road and Bridge Works (Fourth Revision), Ministry of Road Transport and Highways, Indian Road Congress (IRC) Publications, 2001.
12. Code of Practice for Plain and Reinforced Concrete (Fourth Revision), IS: 456-2000, Indian Standards, 2000.
13. Drinking Water (First Revision) (Amendment 1), Reaffirmed 1993, IS: 10500-1991, Indian Standards, 1993.
14. Construction/Demolition Waste Recycling and Disposal, Saskatchewan Environment, Environmental Protection Branch, SWANA Publication #GR-REC 300, 1993, Senes Consultants Ltd., Environment Canada, December 1993 (Online) [Cited on 21<sup>st</sup> September 2003], Available on Worldwide Web: <http://www.se.gov.sk.ca>
15. Guidelines for The Design of Small Bridges and Culverts, IRC: SP: 13-1973, Indian Road Congress (IRC) Publication, 1973.
16. Guidelines on Supplemental Measures for Design, Detailing & Durability of Important Bridge Structures, IRC: SP: 33-1989, Indian Road Congress (IRC) Publication, 1973.
17. Recommended Practice for Sight Distance on Rural Highways, IRC: 66-1976, Indian Road Congress (IRC) Publication, 1976.
18. Guidelines on Road Drainage, IRC: SP: 42-1979
19. Manual on Landscaping of Roads, IRC: SP: 21-1979, Indian Road Congress (IRC) Publication, 1979
20. Role of Gram Panchayats in Regulating Development along Roads, Post 73<sup>rd</sup> Constitutional Amendment, 1992, Constitution of India.
21. Howell John., Road side Bio-engineering
22. Donald H Gray, Robbin B Sotir., Biotechnical and Bioengineering Slope Stabilization-A Practical Guide for Erosion Control. (Wiley)