

**Uttar Pradesh core Road Network Development Project
Environmental Assessment (EIA/EMP) and Social Impact Assessment and
Resettlement Action Plan
Executive Summary for Roads identified for implementation in Phase I**

1.0 Introduction

The state has a road network of 299,604 km, out of which 174,451 km is under Uttar Pradesh Public Works Department (PWD). The roads under PWD comprise 7,550 km of National Highways (NHs), 7,530 km of State Highways (SHs), 5,761 km of Major District Roads (MDRs), 3,254 km of Other District Roads (ODRs) and 138,702 km of Village Roads (VRs). Only about 60% of SHs are two-lane (7 m). In the entire state 62% of MDRs and 83% of ODRs have widths less than 7 m.

With a view to improve the transport network system, UP PWD has identified 24,095 km of Core Road Network (CRN) for the development. The Core road development works will consist of raising the formation level, widening to a full two lanes from the existing single and intermediate lane widths, and/or pavement rehabilitation/strengthening. Road sections with high volumes of non-motorized traffic will be widened to 10m with 1.5m full paved shoulders. Road stretches crossing urban areas may also require upgrading to a four lane cross section, and/or provision for drains, sidewalks and parking where required. In some cases, new alignments (by-passes and/or re-alignments) may also be required. In view of the above, UP core road network development project (UPCRNDP) has been designed. The UPCRNDP will have three Components:

Component 1: Network Improvement (Total Cost: US\$477 million, including IBRD US\$334.9 million)

The Network Improvement component will include pavement strengthening, upgrading (widening and strengthening), and maintenance of about 500 kms high priority SH corridors, part of the defined Core Road Network (CRN). The component shall include civil works, rehabilitation and resettlement (R&R); and associated consulting services and goods. Phase 1 roads, for which procurement has been done during project preparation, comprise:

1. Hamirpur-Rath Road (SH-42) – 75km
2. Garautha-Chirgaon Road (SH-42) – 50km
3. Gola-Shahjahanpur Road (SH-93) – 59km
4. Badaun-Bilsi-Bijnaur Road (Sh-51) – 79km

Component 2: Institutional Strengthening of PWD (Total cost US\$ 3.00 million, including IBRD financing of 2.1 million). This component includes the following:

- The main focus of the project in developing institutional capacity of PWD will be on **strengthening of asset management practices**. The proposed activities under this component shall include operationalization of Road Asset Management System (RAMS), integrated with Geographic Information System database.
- Along with the importance, traffic volume, condition of the road section (and possible other criteria), its climate vulnerability will be one of the key criteria to be used when prioritizing investments via the proposed road asset management system and bridge management system.
- The project will support strengthening quality management and control in PWD. It will help development of a comprehensive QM policy and system and operationalization within PWD.
- The project will support recommendations of the gender assessment (ongoing), which will identify additional gender gaps.

- The project will support a program of training and capacity building for PWD staff on, *inter alia*, asset management, contract management, social and environmental safeguards, including gender awareness and GBV, climate resilient road designs, road safety, including attending international and/ or domestic training course, workshops, international exposure visits, and knowledge exchanges.

Component 3: Road Safety (Total cost US\$ 90.00 million, including IBRD financing of 63.00 million): This comprehensive Road Safety component aims to achieve quick, visible and measurable reductions in deaths and injuries on targeted sections of the road network through integrated and multi-sectoral package of interventions focused on prevention of fatal crashes. Simultaneously the project will strengthen institutional management capacity across participating agencies, which will enable them to scale up and sustain successful safety programs across the remainder of the core road network. The project will support the following initiatives and activities:

Subcomponent 3A: Road Safety Initiative by Home/Police (Total cost US\$41.00 million). : This subcomponent will support the following initiatives:

- **Establishment of UP Highway Police (UPHP)** to improve enforcement focusing on preventing crashes, and ultimately, achieving reductions in road crash deaths and injuries.
- **Social marketing and media campaigns** to support UPHP enforcement operations in the pilot corridors.
- **Monitoring and evaluation** of UPHP road safety performance in the pilot corridors.
- The project will support development and state-wide implementation of a web-enabled crash database and analysis system (UPCDAS) that will meet the specific requirements of all road safety partners and stakeholders in Uttar Pradesh.
- The project will support a program of training and capacity building for UPHP staff on road safety policing, crash investigations, data collection and analysis, community engagement, use of safety equipment, including attending international and/ or domestic training course, workshops, international exposure visits, and knowledge exchanges.

Subcomponent 3B: Road Safety Initiative by Transport Department (Total cost US\$14.00 million): This subcomponent will strengthen capacity of the Transport Department as the nodal agency for road safety in the state, and support building capacity in road safety management, planning, monitoring and evaluation of road safety programs and specific activities to improve vehicle safety and safe driving, especially commercial transport. It will fund the following activities:

- The project will finance strategic management support and capacity building of the Road Safety Cell, including advisory and expert support, support for development of road safety strategy and action plans, monitoring and evaluation, data analysis and reporting.
- State-wide media campaigns will be implemented in support of the State Road Safety Policy.
- The project will focus on strengthening commercial driver training and certification, including support for strengthening of the Driver Training Institute (DTI), training of UPSRTC drivers in road safety and emergency responses, development of a training program and providing training for commercial drivers, and development of a health

check-up system for commercial drivers.

- The project will support development of optimal designs for vehicle testing stations and finance establishment of up to five vehicle testing stations.
- The project will support a program of training and capacity building for department staff on road safety management, data analysis, preparing and monitoring implementation of road safety strategy and action plans, including attending international and/ or domestic training courses, workshops, international exposure visits, and knowledge exchanges.

Subcomponent 3C: Road Safety Initiative by PWD (Total cost US\$35.00 million). : This subcomponent will improve safety of state highway network through implementation of targeted safety engineering improvement programs on the Core Road Network and build capacity in PWD in road safety, and will support following activities:

- Road infrastructure safety improvement programs
- Capacity building and expert support to the Road Safety Division of PWD

Component 4: Contingent Emergency Response Component (CERC) (Total cost US\$ 0.00 million). Uttar Pradesh has been plagued by various natural disasters such as floods, drought, fire, epidemics, earthquake, causing severe damage to life and property and thus adversely affecting normal life. Out of 71 districts, 30 are highly prone to floods while drought is a regular phenomenon in Vidhyachal and Bundelkhand region. Similar is the case with epidemics. This component would ensure that once a disaster is triggered, funds can be quickly allocated to this component as per exceptions set out in the World Banks policies.

2.0 Objective of the study

The study has the following objectives:

- a baseline database containing the environmental and social features and issues in the immediate vicinity of proposed road corridor;
- structures likely to be affected by the widening/improvement proposal;
- highlight the social problems and suggests general and typical mitigation measures to alleviate social problems that the project-affected people may face less loss of livelihood, displacement and loss of access to community facilities etc;
- identify key environmental issues and mitigation measures for negative impacts, as well as enhancement activities for positive impacts
- understand the policy and regulatory framework to guide development of appropriate management plans to ensure compliance with the applicable national and state requirements as well as policies of the World Bank
- develop resettlement action plan to avoid, reduce or mitigate likely negative impacts of project and enhance positive impacts, sustainability and development benefits;
- carry out an environmental impact assessment to develop environmental management plan for each road describing mitigation measures and enhancement measures to be implemented as part of the project

3.0 Scope of the Study

The scope of the study includes:

Environment

- Collection of information about current environmental conditions in the study area from secondary sources
- Monitoring of pollution in sample representative locations to establish levels of air, noise and water quality as well as tree survey and other biodiversity related studies as appropriate
- Preparation of Environmental Impact Assessment including Environmental Management Plan

Social

- Carry out Structure Verification Survey of the structures likely to be affected and Census and Socio-Economic Survey of the Project Affected Persons (PAPs) to get the base line information about the level of impact and to get the base line socio economic status of the PAPs.
- Preparation of Strip Plan showing existing structures likely to be affected along the project road
- Conducting Social Impact Assessment including Rehabilitation and Resettlement (R&R) studies
- Preparation of Social Impact Assessment (SIA) report and Resettlement Action Plan (RAP)

4.0 Methodology

Environment

The preparation of the EIA and EMP for each road has been undertaken in line with guidance provided in the ESMF. It also used the EIA Manual for highway projects prepared by the MoEF and available good practice guidance from multilateral funding agencies like the ADB and World Bank. The steps in the process were:

- *Identification of alignment specific environmental constraints using the checklist in the ESMF:* The hot spots identified during the screening exercise were further assessed for their criticality and impacts jointly by teams of environmental specialist, social impact specialist, design engineers and surveyors.
- Review of the policies, legislation, and regulation governing road improvements with World Bank support in Uttar Pradesh
- *Collection of data from secondary sources like published literature, government documents, etc.* These included Survey of India topo sheets, District Planning Maps, Forest Statistics, Wetland Atlas, Statistical Abstract of Uttar Pradesh for 2012 Collection of Primary data on environmental components. Field survey were carried out to collect information on the major environmental features such as settlement facilities, drainage pattern of the area, forest, trees within RoW of the alignment, water bodies, river crossing, sensitive receptors, air, water, noise and soil quality etc.
- *Consultations with stakeholders,* including public meetings and focused meetings with government officials in Forest and Revenue departments
- *Analysis, including modeling for some impacts and selection between various options for avoidance, minimization, and mitigation.* This included preliminary estimates using HDM4 for fuel consumption for estimating GHG emissions. It also covered options of using different construction material to minimize resource use.
- *Finalization of the selected option* and estimation of costs with roles and responsibilities of various stakeholders, including implementation, supervision, monitoring and reporting within GoUP, and to the World Bank.

For the activities to be undertaken through the transport department under Component 3B, the ESMF for Component 1 has been modified to concentrate on aspects relevant to area-based improvements. It also includes a negative of list types of locations that would be avoided in case new facilities are to be created outside existing premises. It will assist the Transport Department to finalise designs and bidding documents with minimal impacts on local drainage and consideration of safe working conditions both for

labourers developing the site and general public using the site, where applicable. It also provides guidance on plans for safe vehicle movement close to the facilities, and emergency actions required in case of accidents. This framework will be operationalized once sites are identified for up to 5 vehicle testing stations.

Social

The resettlement action plan is based on the primary and secondary data sources. Secondary data source include Gazetteer of project districts and District Census Details, 2011. To assess the socio-economic condition, a questionnaire has been developed and used to conduct census and socio-economic survey of the project affected persons within the identified corridor width. Following steps were followed during the Social impact assessment and preparation of RAPs:

Step 1: Reconnaissance Survey and Screening to take into account sections with social issues and identify stakeholders through discussions with project authorities and community members along the project corridors.

Step 2: Ascertaining right of way through collection of records from revenue department

Step 3: Conducting Census and Socio-economic Survey in 30 m corridor

Step 4: Identifying social hotspots

Step 5: Conducting community consultations

Step 6: Social Input to design

Step 7: Identifying Actual PAPs by superimposing design on social strip plans

Step 8: Preparing Resettlement Action Plan

5.0 Consultations

Considering the importance of people's participation in the project planning, public consultation and FGDs were also carried out at different levels at various stages of project preparation. The objectives of the consultation were to disseminate information about the project to the potentially affected population in order to incorporate their views and suggestion for preparing the RAP and the design and to assess the economic situation of the settlement. The consultation focuses on identification of issues raised by the PAPs and its integration in the Resettlement Action Plan.

6.0 Collection of Data from Secondary Sources

Throughout the Study, various types of secondary data were used along with the primary data collected through surveys. Secondary data sources included Uttar Pradesh at a Glance, published by Jagaran Publications (Social, Cultural, Demographic and Economic profile of Uttar Pradesh), District Census Handbooks of districts through which road is passing through, Tehasil Offices; and Census of India, 2011.

7.0 Right of Way

The established width of right of way on an average is 30m. However, ROW width varies from 8 m to 36 m. Moreover, the existing ROW is not free of encumbrances. Using available records with the PWD and the revenue department, R&R team have verified the boundaries of legal right of way as well as boundaries of private properties within and in the vicinity of the corridor of impact. The limit of displacement will be limited not to the legal right of way but only to the corridor of impact.

COVERAGE: This document provides an overview of the impacts of roads considered in phase I on the biophysical and socio-economic environment in the project area, including affected people. It also summarizes the measures taken to ensure that these are managed appropriately in line with requirements of the local laws as well as the applicable World Bank policies. It is pertinent to mention here that each road has been analyzed in detail and each EIA/EMP and the RAP include their own executive summaries. These individual summaries may be referred for details of current conditions and

relevant regulatory requirements in the project area with reference to the bio-physical as well as socio-economic variables. These documents have been publicly disclosed in country and in the Infoshop. These documents can be accessed at

<http://uppwd.gov.in/pages/en-externally-aided-project-en/world-bank-projects>

8.0 Impacts

Environment

The project improvements will result in requirement of cutting of about 32,435 trees, which are classified as protected forests in Uttar Pradesh, along all Phase I roads put together. Out of these, over 48% (15,667) are along Badaun-Bilsa road, while the least – slightly over 9% (3003) – are along the Garauntha-Chirgaon road. None of the Phase I roads pass close to any protected areas or other natural habitats. A total of 12 roadside water bodies could be negatively impacted by the road works. While there are none of the 3 along the Garauntha-Chirgaon road, 3 out of 20 are likely to be affected along Hamirpur-Rath road, 7 out of 25 along Gola-Shahjahanpur road, and 2 out of 6 water bodies along the Badaun-Bilsa road. If not properly designed, improved roads could have safety concerns during the operation phase, especially since design speed improvements are a key desired outcome of the project. Climate change related impacts have been identified and where possible suitable mitigation measures are included as part of the design. Greenhouse gas emission projections made using HDM 4 indicate slight increase in projected emissions over the no-project scenario for Gola-Shahjahanpur road (about 8.85%), and Badaun -Bilsa road (8.80) and reductions for the Hamirpur-Rath road (-3.90%) and Garauntha-Chirgaon road (-11.81%).

Other commonly identified impacts during construction phase of include the pollution increase from plants required for construction – Hot-mix, Cement batching, and from domestic waste of construction camps established for the project. In addition, safety of the workers and other road users, especially since these roads will be improved while being used by regular road users, are a key concern.

Social

The project will impact a total of 1395 families (837 households and 2718 persons) of which 478 families will be displaced. The displaced families are non-titleholders and largely small commercial structure and kiosk owners. Out of total 1395 affected families, 894 are losing commercial structures of which more than 50 percent are kiosk owners. These kiosks will move out of corridor of impact but will remain within the right of way. Nearly 200 families are losing part of their residential structure. Project activities though largely is restricted within the right of way, project will be acquiring 7.7 ha of private land for widening of bridge approaches. The families losing part of their agriculture land are 16 percent of the total project affected families and no titleholder is getting displaced. Project will also impact 65 common property resources and majority of them are hand pumps. The other CPRs include religious structures, stand posts, water tanks, bus stops and boundary walls.

9.0 Cutoff Date

The date of completion of census survey will be considered as cut-off date for non-titleholders. Accordingly, May 1, 2018 is the cutoff date. People who were not surveyed during the census will not be considered as PAP. However, a person not enumerated during the census, but able to prove their stay in the project corridor, during the census survey will be considered for

entitlement. The cutoff date for titleholders will be date of notification u/s 11 of RFCTLARR Act 2013.

10.0 Mitigation Measures

Environment

The key mitigation measure for the impacts on trees is the provision of compensatory afforestation of twice the number of trees cut, in compliance with the Forest (Conservation) Act, 1980, which is funded by the project and executed by the Forest Department. Other mitigation measures include the provision of toe wall protection for select ponds, and compensation of storage volume, where such protection is not possible. Seven ponds along Gola - Shahjahanpur road have provision of such toe walls. Water harvesting structures have been included in the project design for ensuring groundwater recharge along all 4 roads. Since the project also focuses on the safety of road users, design of the roads already include special provisions close to the settlements like traffic calming measures with signages and other interventions. In addition, safe road use orientation training for people, especially children, living in the project area is also envisaged. Additional enhancement measures are proposed for select locations identified along each road. There are 2 ponds and 1 school that will benefit along Hamirpur-Rath road, 2 public meeting places along Garutha-Chirgaon road, 2 schools along Gola-Shahjahanpur, and 1 temple and 1 pond along Badaun-Bilsa road.

For impacts that can be directly undertaken by the Contractor, relevant portions of the Environmental Management Plan form a part of the bidding/Works Contract document. A stylized typical EMP with impacts mitigated through this arrangement, their supervision and monitoring as well as reporting requirements, is included as an **Annexure I** to the Summary.

Social

In order to minimize and / or mitigate adverse social impacts, Uttar Pradesh Public Works Department has developed a Project specific Resettlement & Rehabilitation (R & R) Policy, and an Environment and Social Management Framework (ESMF). This policy and the ESMF is based on the Right to Fair Compensation and transparency in land Acquisition, Rehabilitation and Resettlement Act, 2013 subject to subsequent supplements by Government of Uttar Pradesh (GoUP) orders and World Bank Operational Policy 4.12 on involuntary resettlement. Based on project specific R&R policy, Resettlement Action Plans for all the four phase I corridors have been prepared and disclosed in country as well as on Bank's InfoShop. The mitigation measures include compensation for lost asset; R&R assistances; and livelihood restoration measures. The ESMF provides guidance in preparation of RAPs for phase II roads. The entitlement matrix as per different impact categories is given below.

S. No.	Application	Definition of Entitled Unit	Entitlement	Details
A. Loss of Private Agricultural, Home-Stead & Commercial Land				
1	Land within the Corridor of Impact (COI)	Titleholder family. and families with traditional land Right	Compensation at Market value, Resettlement and Rehabilitation	<ul style="list-style-type: none"> Land for land, if available. Or, Cash compensation for the land at Market value, which will be determined as provided under section 26 of RFCTLARR Act 2013. The land if allotted will be in the name of both husband and wife. If post acquisition, residual land is economically unviable, the land owner will have the choice of either retaining or sell off rest of the land. Refund of stamp duty and registration charges incurred for replacement land to be paid by the project; replacement land must be bought

S. No.	Application	Definition of Entitled Unit	Entitlement	Details
				<p>within a year from the date of payment of compensation to project affected persons.</p> <ul style="list-style-type: none"> • Subsistence allowance of Rs. 36000 as one time grant • One time grant of Rs. 500,000 or annuity • Compensation at market value for loss of crops if any
B. Loss of Private Structures (Residential/Commercial)				
2	Structure within the Corridor of Impact (Col)	Title Holder/ Owner	Compensation at Market value, Resettlement & Rehabilitation Assistance	<ul style="list-style-type: none"> • Cash compensation for the structure at replacement value which would be determined as per as per section 29 of the RFCTLARR Act 2013. House under Indira Awas Yojna in rural area or Rs. 50000 in lieu off and house under Rajiv Awas Yojana in urban area or Rs 100,000 in lieu off. The house if allotted will be in the name of both husband and wife. • Right to salvage material from the demolished structures. • Three months' notice to vacate structures. • Refund of stamp duty and registration charges for purchase of new alternative houses/shops at prevailing rates on the market value as determined in (a) above. Alternative houses/shops must be bought within a year from the date of payment of compensation. • In case of partially affected structures and the remaining structure remains viable, additional 10% to restore the structure. In case of partially affected structures and the remaining structure becomes unviable additional 25% of compensation amount as severance allowance. • Subsistence allowance equivalent to Rs. 36000 as one time grant. • Each affected family getting displaced shall get a one-time financial assistance of Rs 50,000 as shifting allowance. • Each affected family that is displaced and has cattle, shall get financial assistance of Rs 25,000/- for construction of cattle shed. • One time grant of Rs. 50,000 as resettlement assistance • Each affected person who is a rural artisan, small trader or self-employed person and who has been displaced (in this project owner of any residential-cum commercial structure) shall get a one-time financial assistance of Rs 25,000/- for construction of working shed or shop. • One time grant of Rs. 500,000.
3	Structure within the Corridor of Impact (Col)	Tenants/ Lease Holders	Resettlement & Rehabilitation Assistance	<ul style="list-style-type: none"> • Registered lessees will be entitled to an apportionment of the compensation payable to structure owner as per applicable local laws. • In case of tenants, three months written notice will be provided along with Rs. 50,000 towards shifting allowance.
C. Loss of Trees and Crops				

S. No.	Application	Definition of Entitled Unit	Entitlement	Details
4	Standing Trees, Crops. within the Corridor of Impact (Col)	Owners and beneficiaries (Registered/ Un-registered tenants, contract cultivators, leaseholders & sharecroppers)	Compensation at market value	<ul style="list-style-type: none"> • Three months advance notice to project affected persons to harvest fruits, standing crops and removal of trees. • Compensation to be paid at the rate estimated by: <ul style="list-style-type: none"> ○ The Forest Department for timber trees ○ The State Agriculture Extension Department for crops ○ The Horticulture Department for fruit/flower bearing trees. • Registered tenants, contract cultivators & leaseholders & sharecroppers will be eligible for compensation for trees and crops as per the agreement document between the owner and the beneficiaries. • Un-registered tenants, contract cultivators, leaseholders & sharecroppers will be eligible for compensation for trees and crops as per mutual understanding between the owner and the beneficiaries.

D. Loss of Residential/ Commercial Structures to Non-Titled Holders

5	Structures within the Corridor of Impact (Col) or Government land	Owners of Structures or Occupants of structures identified as per Project Census Survey	Resettlement & Rehabilitation Assistance	<ul style="list-style-type: none"> • Non vulnerable encroachers shall be given three months' notice to vacate occupied land • Vulnerable encroachers will be provided cash assistance at replacement cost for loss of structures as described in section 29 of the RFCTLARR Act 2013. • Any encroacher identified as non-vulnerable but losing more than 25% of structure used will be paid cash assistance at replacement cost for loss of structures. The amount will be determined as per section 29 of the RFCTLARR Act 2013. • All squatters to be paid cash assistance for their structures at replacement costs which will be determined as mentioned in section 29 of the RFCTLARR Act 2013. • All squatters (other than kiosks) will be eligible for one-time grant of Rs 36000 as subsistence allowance. • All squatters other than Kiosks will be given shifting allowance of Rs 50,000 per family as one time grant for a permanent structure and Rs. 30,000 for a semi-permanent structure and Rs. 10,000 for a temporary structure. • Each affected person who is a rural artisan, small trader or self-employed person assistance of Rs 25,000/- for construction of working shed or shop. • In case of Kiosks, only Rs. 5000 will be paid as one time grant.
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E. Loss of Livelihood

6	Families living within the Corridor of Impact (Col)	Title Holders/ Non-Title holders/ sharecroppers, agricultural	Resettlement & Rehabilitation Assistance	<ul style="list-style-type: none"> • Subsistence allowance of Rs. 36,000 as one time grant. (PAPs covered under 1(f), 2 (f) and 5 (e) above would not be eligible for this assistance). • Training Assistance of Rs 10,000/- for income generation per family.
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S. No.	Application	Definition of Entitled Unit	Entitlement	Details
		labourers and employees		<ul style="list-style-type: none"> Temporary employment in the project construction work to project affected persons with particular attention to vulnerable groups by the project contractor during construction, to the extent possible.
F. Additional Support to Vulnerable Families				
7	Families within the Corridor of Impact (Col)	SC, ST, BPL, WHH families	Resettlement & Rehabilitation Assistance	<ul style="list-style-type: none"> One time additional financial assistance of Rs. 50,000. Squatters and encroachers already covered under clause 5 are not eligible for this assistance.
G. Loss of Community Infrastructure/Common Property Resources				
8	Structures & other resources (e.g. land, water, access to structures etc.) within the Corridor of Impact (Col)	Affected communities and groups	Reconstruction of community structure and <ul style="list-style-type: none"> common property resources 	<ul style="list-style-type: none"> Reconstruction of community structure and Common property resources in consultation with the community.
H Temporary Impact During Construction				
9	Land & assets temporarily impacted during construction	Owners of land & Assets	Compensation for temporary impact during construction e.g. diversion of normal traffic, damage to adjacent parcel of land / assets due to movement of heavy machinery and plant site.	<ul style="list-style-type: none"> Compensation to be paid by the contractor for loss of assets, crops and any other damage as per prior agreement between the 'Contractor' and the 'Affected Party'.
J. Resettlement Site				
10	Loss of residential structures	Displaced titleholders and non-titleholders	Provision of resettlement site/ vendor market	<ul style="list-style-type: none"> Resettlement sites will be developed as part of the project, if a minimum of 25 project displaced families opt for assisted resettlement. Vulnerable PAPs will be given preference in allotment of plots/flats at the resettlement site. Plot size will be equivalent to size lost subject to a maximum of provision given in RFCTLARR Act 2013. Basic facilities shall be provided by the project at resettlement site as per the provisions given in the Third Schedule of RFCTLARR Act 2013. Similarly, if at least 25 displaced commercial establishments (small business enterprises) opt for shopping units, the Project Authority will develop the vendor market at suitable location in the nearby area in consultation with displaced persons. Basic facilities such as approach road, electricity connection, water and sanitation facility, will be

S. No.	Application	Definition of Entitled Unit	Entitlement	Details
				provided in the vendor market by the project. Vulnerable PAPs will be given preference in allotment of shops in vendor market. One displaced family will be eligible for only one land plot at resettlement site or shop in the vendor market.

11.0 Gender Action Plan

Mainstreaming gender equity and empowerment is already a focus area in the project. Per the 2011 census, employment opportunities seem to be much lower for women in Uttar Pradesh. The labour force participation rate for females is only 16.5 percent as compared to 46.8 percent for males. The labour force participation rate for women in the project corridor is little less than 14 percent. At the same time women's participation in the transport sector in India is significantly lower than male participation in the sector. Nationally, of the total number of people employed in the transport, storage and communications sector in India, is only 2% are women.[1] It has been agreed to add a provision to the EPC civil works contracts, requiring contractors to hire females for at least 30 percent of routine maintenance works such as filling of potholes; maintaining shoulders; etc.(each EPC contract includes a 5-year maintenance period).In the sub projects, activities related to livelihood restoration women's need has been addressed. The fear of harassment in the workplace is a major deterrent for women from working. The project will work with PWD to support effective implementation of the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal Act, 2013 (SHWW Act 2013). The project will support strengthening the Internal Complaints Committee (ICC), dissemination of information regarding the ICC and standard operating procedures to register complaints and address them within the given time. Data on GBV was collected during census and socio-economic survey. A gender action plan has been prepared as part of RAP. Though RAPs prepared under the project for phase I roads has gender action plan focussing additional livelihood scope for women apart from creating awareness for gender based violence; safety of women and child; and equal participation of men and women in decisions related to project, project will undertake detailed gender assessment of selected roads and three urban centres.

12.0 Minimizing Impacts

Environment

Integration of environmental concerns with the design has been a feature of the project design. It has had clear benefits, for instance, with respect to use of alternative material – such as ash from power plants for the construction of embankment wherever it was found to be appropriate. Approximately 24180 cu. m. of ash would be utilized for construction of embankment for the Gola-Shahjahanpur road, 19,000 cu. m. would be used for Garutha-Chirgaon road, and another 12860 cu. m. of ash would be used for the same purpose for the Badaun-Bilsa road. In addition saving ponds adjacent to the roads, where these are in use has been also included as part of the design. Along Badaun-Bilsa road, impacts on two ponds have been avoided by the use of alignment modification and protection measures – stone pitching. A total of 957500 cu.m.of recycled material from roadway cut in and drain is being used in the project resulting in corresponding reduction in requirement of fresh material for embankment. This includes 268000 cu. m for Hamirpur-Rath section of SH-42, 218000 cu.m, from Gauratha-Chirgaon section of SH-42, 201500 cu.m. for Gola-Shahjahanpur section SH-93 and 270000 cu.m. for Badayun-Bilsa-Bijnor section of SH-51.

[1] Based on ILO data, using a three year average.

A total of 91 additional culverts have been designed for the 4 roads put together to minimize erosion/flooding impacts. Of these almost a 1/3rd (35) are along Badaun-Bilsa road, while another 31 are along HamirpurRathroad. The least additional culvert requirements are along Gola-Shahjahanpur road.

Social

Due importance has been given to social issues while road designing. The coordination between social and design team helped in minimizing the number of PAPs and affected PAHs. Concentric widening has been proposed in 204 km out of total 265 km to avoid involuntary land taking and minimize the social impact. Eccentric widening option has been proposed in rest 58 km (22% of the total 265 km) of the road corridors primarily for geometrical correction and improvement of existing road alignment. However, those within the right of way (ROW) but not within corridor of impact (COI) will not be displaced by the project. In view of safety requirements as well as segregation of the fast moving traffic from the local slow moving traffic, paved shoulder has been proposed in the entire project road. Provision of street lighting has been made in habitations as one of the road safety measures.

13.0 Timing of Resettlement

The resettlement process will be completed before the start of civil works on a particular milestone. The milestones for handing over the stretch to the contractor have been finalized through a joint survey of PWD and PMC consultants. The milestones are based on degree of hindrance. Stretches, which are free of encroachment and other encumbrances, will be handed over first to contractor. Project has hired the services of NGO to implement the RAP. PAPs within the corridor of impact in a particular milestone will be relocated before the civil work starts on any section of the project road.

14.0 Institutional Arrangement

The UPPWD has established Environment; Social Development and Resettlement Cell at headquarters level. ESDRC is headed by Project Director and will be assisted by one Environment and one Social Development Coordinator. The coordinators will be of the rank of Assistant Engineer of PWD. At the district level, project will establish project implementation unit. One Assistant Engineer will be designated as Environmental and Social Officer (ESO). ESO will be responsible for coordinating with line departments at the district level and will also facilitate land purchase wherever required. In addition, services of a Non-Governmental Organization (NGO) having relevant experience in implementation of R & R projects have been contracted to provide assistance to Implementing Authority as well as affected persons. The district level committees will be set up to facilitate the finalization of replacement value and all grievances of the people. During implementation, the social development specialist of PMC will be responsible for day to day monitoring of RAP implementation. Project will hire independent consultants for mid-term and end term evaluation of RAP implementation. The roles and responsibilities of each of these players have been detailed out in corridor specific RAP. The resettlement action plan for each corridor will be implemented in two years.

The Transport Department will have its own ESO whose terms of reference are included in the ESMF. This ESO will be the primary contact for environmental and social aspects for interaction with various stakeholders including staff in the field, general public, consultants, World Bank.

The implementation of the EMP, pertaining to Civil Works, will be undertaken by the contractor. The contractor team is required to have an environmental and safety officer for day-to-day supervision of the works. They will also undertake periodic environmental monitoring to confirm the levels of pollution in the project area, especially where there are ongoing civil works, both along the roads, and in the contractors' camps. The PMC will supervise the implementation and keep the ESDRC informed regarding the progress in implementation, as well as any

challenges/bottlenecks. The ESDRC will also coordinate with other departments like Forests, Health, and Education for components that are beyond the Civil works. Individual EMPs contain the Terms of Reference for each stakeholder that the PWD will be responsible for.

15.0 Grievance Redress Mechanism

An Integrated Grievance Redress Mechanism (IGRM) will be established at the head quarter level that will register user complaints using combination of various mediums (e.g. a dedicated toll free phone line, web based complaints, written complaints in feedback register and open public days) and address them in a time bound system. The project will appoint a Grievance Redress or Public Relation officer solely responsible for handling phone and web-based complaints. The person will be responsible for directing the aggrieved person to the concerned official through e-mail. On receiving any phone call or web based or email, a unique number will be generated which will be the reference number for the caller and he can trace the progress of his grievance / query through that number. Any complaint lodged will be addressed within 15 days of receiving the complaint. System will have escalation matrix i.e. if grievance / query remain untended or there is no response from the concern officer for specified period of time than system will escalate the grievance / query to next level through email. The toll-free line will be monitored between 10 AM to 5.30 PM on all working days. Any call made before or after the stipulated time, will get recoded and from the voice mail an e- mail will be generated addressed to the grievance officer. The grievance officer will then direct that mail to the concerned official and follow-up. The recorded message will be responded back the next day. The project will also commit itself for proactive disclosure and sharing of information with the key stakeholders, including the communities/beneficiaries. The website of PWD will have the name and number of social development officer; the toll-free number and also the website address.

16.0 Consultations

A total of 25 local level consultations were carried out across all the four phase I corridors with the local community including project affected persons. While updating the RAPs, another 7 community consultations were carried out. The issues discussed included widening options; removal of encroachment; employment opportunities; shifting religious structures and other common properties; safety of women and children; compensation and drainage. The suggestion given by the community has informed project preparation and has been incorporated in the design and Resettlement Action Plans and EIA/EMP as appropriate. Such consultations will continue during the implementation phase as well.

17.0 Budget

Environment

The total budget for the environmental management plans for all 4 Phase I roads is slightly over INR 422.41 million. Tree plantation, including compensation at the rate of the Net Present Value of protected forest, is the largest component of the estimate. In addition, budgetary provision has been made for the enhancement of select locations along each road. Monitoring of pollution in both construction and operation phases has been included in the estimate. In addition, training of the staff has also been budgeted.

Social

The cost for implementation of RAP has been estimated at INR 143.8 million for all the four phase I corridors. The estimated budget covers the cost towards acquisition of private land in two corridors; R&R assistances, relocation / reconstruction of common property resources; gender action plan; administrative expense, monitoring and evaluation and contingencies.

ENVIRONMENT MANAGEMENT PLAN (EMP)

The EMP should be sub-project specific, clearly and concisely describing adverse impacts, selected management measures to bring it to an acceptable level and timelines for implementing these measures. It should also clarify roles and responsibilities among the various stakeholders – UPPWD, PMC, Contractors, other GoUP departments. It would be useful if contract specific EMPs are prepared as this would facilitate integration with the bidding documents. The building blocks of an EMP are:

- Potential Adverse Impacts Identified and Mitigation measures to be adopted, together with conditions within which one or other measure would apply and their integration with phases operations of road construction – Design, Pre-construction, Construction/ Implementation and Operation
- Enhancement plans for positive impacts
- Monitoring Plan with indicators, mechanisms, frequency, locations,
- Budgetary allocations for all the above activities
- Institutional arrangements for each activity and mitigation measures
- Implementation schedules for each activity and its integration with the sub-project implementation timelines
- Reporting procedures, including for redressing grievances related to environmental issues

The general Environmental Concerns during DPR stage and project implementation stage associated with road projects are presented in Table 1.0 and Table 2.0. These concerns are required to be addressed properly in preparation of Environmental Management Plan.

Table 1.0: Environmental Concerns in DPR Preparation

S. No.	Activity	Items to consider	Measures to address
A.	Road Construction		
1.0	Environmental Inventory	Trees Forests Wildlife sanctuary/National Park/Tiger reserves/ notified Eco-sensitive zones Rivers / water crossings Water bodies Wetland Grazing lands Cultural properties Utilities	Inventorisation of environmental features Avoidance, design modifications to minimize adverse environmental impacts Incorporating community concerns into finalizing alignment

S. No.	Activity	Items to consider	Measures to address
		Community facilities	
		Major junctions	
2.0	Detailed Surveys	Geological, geotechnical studies	Stability analysis and measures to address slope instability, bridge works, etc.
		Topographical surveys	Detailing of features
		Hydrological surveys in flood prone areas	Identification of flood prone areas and measures to avoid afflux Identification of agricultural use of land
3.0	Identification of material sources	Borrow material	Utilizing alternative materials
			Minimize requirements through design modifications
			Location criteria
		Quarry material	Utilizing alternative materials
			Material extraction from existing quarries
		Water availability	Identification of perennial/community/private sources
			Scheduling construction to suit water availability
			Utilizing community water sources without conflict of uses
		Water bodies	Provision of silt fencing
			Rehabilitation of water bodies
		Stability of slopes	Measures for slope stabilization
		Soil erosion	Erosion control measures
		Land use changes	Land use control measures adjacent to the road
			Empowering Gram Sabha to regulate development
		Agriculture lands	Avoidance from setting up construction camps, borrow areas
Conservation of top soil			
Site restoration after construction			
Cultural properties	Avoidance through design modifications		
	Planning for Relocation & rehabilitation		

S. No.	Activity	Items to consider	Measures to address
		Common Property Resources	Avoidance through design modification
			Planning for Relocation of consultation with community
		Drainage	Provision of adequate number of CD Structures
		Trees	Compensatory plantation & arrangements for roadside plantation
		Forest areas	Avoidance through design modifications
			Environment Management measures during construction
Natural Habitats	Avoidance through design modification or formulating additional measures for avoiding impacts		
5.0	Precautionary measures during construction to avoid environmental impacts	Top soil	Stockpile topsoil and preservation
		Construction sites	Provision of pollution control measures
			All measures to ensure public & worker's health/safety
			Water Management
		Construction camps	Criteria for identification of sites and Infrastructure arrangements
			Safe disposal of all wastes
			Enforcement of pollution control measures
		Borrow areas	Arrangements with land owners to include redevelopment
		Quarry areas	Rehabilitation of quarry areas if new quarries are opened
		Public/workers health & safety	Personal Protective Equipment to be provided
			Public safety at construction sites to be undertaken
Measures for worker's health & hygiene at construction camps			
6.0	Consultations with community	Land for borrowing	Agreement to include borrow area rehabilitation
		Water for construction	Agreements with owners/community for utilizing water
		Site for construction camps	Rehabilitation of the land after construction

S. No.	Activity	Items to consider	Measures to address
		Removal of trees	Compensation for the trees cut
			Relocation costs to be covered in the project
			Relocation costs to be covered in the project
		Traffic during construction	Provision of alternate routes or prior notice to the users
7.0	Finalization of alignment	Concerns of community	Community concerns to be incorporated
		Environmental impacts identified	Impacts identified are to be mitigated by incorporation of provisions as per guidelines
		Design aspects	Impacts that can be mitigated through design modifications should be incorporated
8.0	Preparation of detailed drawings	All concerns/impacts identified	Designs for enhancements and mitigation measures including cost provisions
9.0	Monitoring of Progress	All environmental aspects identified	Monitoring implementation of Environmental measures

Table 2.0: Environmental Concerns During Project Implementation –Road Projects

S. No.	Activity and Sub Activity	Impact/s	Measure/s
PC	Pre – Construction Activities		
A1.0	Alignment marking	-Nil-	(i) Co-ordination with revenue department
A2.0	Relocation of utilities	Disruption of services of current use	(i) Identification of relocation site in advance
			(ii) Scheduling the activity in consonance with the community usage pattern
A3.0	Tree Felling	Compliance with Forest Act in case trees are on forest land (the Roadside Trees are notified Protected Forests along the State Highways in U.P.)	(i) Prior clearance from Forest Department
		Loss of canopy and warming effect	(iii) Compensatory plantations & landscape designs
A4.0	Clearance of land	Affect on livelihood	(i) Compensation as per project provisions

S. No.	Activity and Sub Activity	Impact/s	Measure/s
		Affect on standing crops	(ii) Scheduling of activity and coordination
		Affect on cultural properties	(iii) Relocation of the cultural properties
		Affect on natural habitats such as national park, forest, sanctuaries, notified wetlands, fisheries and aquatic habitats.	(iv) No clearance of vegetation beyond proposed RoW.
A5.0	Diversion of forest land	Compliance with Forest Act	(i) Activity scheduling to avoid delays, conformance to legal requirements
		Affect on vegetation	(ii) Precautionary measures during construction in forest areas
		Pollution from construction activities	(iii) Precautions while operating equipment/machinery
A6.0	Transfer of land ownership	Grievances from community	(i) Addressal through Grievance Redressal Mechanisms & Consultations
		Affect on livelihood	(ii) Provision of entitlements as per resettlement framework
A7.0	Location of Storage Yards, labour camps, and construction sites	Pollution from construction camps, storage yards & labour camps	(i) Location criteria to be adopted
			(ii) Obtain NOC from State PCB
		Pressure on local infrastructure	(iii) Infrastructure arrangements to be as per guidelines
A8.0	Procurement of equipments and machinery	Machinery likely to cause pollution at settlements and natural habitats	(i) Machinery to be procured shall be in conformance with emission standards of CPCB
		Safety concerns in machinery operation	(ii) Safety equipment for workers
A9.0	Identification and Selection of Material Sources	Conflict of uses in case of water	(i) Consultations and arrangements at contractor-individual levels, documentation of agreement
		Borrowing causes depressed lands	(ii) Consultations and arrangements at contractor-individual levels, documentation of agreement

S. No.	Activity and Sub Activity	Impact/s	Measure/s
		Pollution due to material extraction from borrow and quarry areas to surrounding environment	(iii) Precautionary measures during siting of borrow areas and quarry areas
		Disturbance to Natural Habitats	(iv) Avoidance of location of material sources in Natural Habitats
A10.0	Identification of designated locations of waste disposal	Pollution due to location close to settlements, water bodies & other sensitive areas	(i) Site selection in conformance to criteria provided
B	Construction Activities		
B1.0	Site Clearance		
B1.1	Clearing and Grubbing	Effect on roadside vegetation	(i) Restricting movement of machinery/equipment
		Debris generation creating unsightly conditions	(ii) Disposal / storage of grubbing waste and possible reuse
B1.2	Dismantling of existing culverts and structures, if any	Generation of Debris creating unsightly conditions	(i) Disposal of waste and likely reuse
		Flooding due to interception to drainage paths	(ii) Provision of diversion channels and/or scheduling construction of culverts in dry months
B2.0	Planning Traffic diversions and Detours	Trampling of vegetation along traffic diversions	(i) Activity scheduling, identification of alternative track
B3.0	Material Procurement	Loss of topsoil	(i) Stripping & Storing topsoil
		Formation of stagnant water pools due to borrowing/quarrying	(ii) Rehabilitation plan for borrow areas & quarry areas
		Illegal quarrying / sand mining	(iii) Conformance of quarries selected to the SPCB requirements, including quarry rehabilitation plans
		Uncontrolled blasting at quarries	(iv) Controlled blasting to the extent required. Conformance to blasting rules as per the Indian Explosives Act

S. No.	Activity and Sub Activity	Impact/s	Measure/s
B4.0	Transport of materials to site	Fugitive emissions from transport trucks	(i) Covering of material with tarpaulin or use of covered box trucks during transport
		Dust emissions from haul roads	(ii) Haul road management
B5.0	Materials handling at site		
B5.1	Storage of materials	Contamination to water sources, leaching into ground water	(i) Provision of impervious base to storage areas
B5.2	Handling of earth	Dust rising and increase in particulate concentration in ambient air	(ii) Use of dust suppressants
B5.3	Handling of fly ash	Increase of particulate concentration and contamination of nearby areas	(iii) Use of dust suppressants
B5.4	Handling of granular material	Risk of injury to workers	(iv) Use of Personal Protective Equipment
B5.5	Handling of bituminous materials	Leaching of materials, contamination of water sources	(v) Provision of impervious base at bitumen storage areas
		Air pollution	(vi) Control of emissions from mixing
B5.6	Handling of oil/diesel	Contamination from accidental spills	(vii) Prevention of accidental spills, affecting cleaning immediately after spill
		Pollution due to incomplete burning	(viii) Use of pollution control equipment
B5.7	Waste management	Littering of debris at construction site	(ix) Waste to be disposed at disposal locations only
		Contamination of surroundings due to runoff from construction site	(x) Prevention of runoff from entering water bodies
B5.8	Operation of construction equipments and machinery	Air & Noise pollution	(xi) Conformance to Emission standards and norms

S. No.	Activity and Sub Activity	Impact/s	Measure/s
		Operational safety of workers	(xii) Conformance to Safety concerns of the road users and workers in operation, first aid provision and mandatory provision of Personal Protective Equipment
B5.9	Movement of Machinery	Trampling of vegetation	(xiii) Restriction of movement within ROW
		Damage to flora & natural habitats	(xiv) Minimizing impact on vegetation
		Damage to road side properties	(xv) Minimizing impacts on private and common properties, including religious structures
B6.0	Earthworks		
B6.1	Cutting	Uncontrolled blasting in case of rock cutting	(i) Controlled blasting to be made mandatory
		Loss of topsoil	(ii) Preservation of topsoil for reuse
		Waste generation	(iii) Safe disposal of waste & possible reuse
B6.2	Embankment construction	Interruption to drainage	(i) Drainage channels to be provided with culverts in advance to embankment construction
		Dust Rising	(ii) Dust suppression with water
		Excess water/material usage	(iii) Minimising height of embankment
		Erosion causing impact on embankment/slope stability	(v) Slope stabilization measures as seeding, mulching & bio-engineering techniques
		Formation of rills / gullies	(vi) Construction of temporary erosion control structures as per requirements
		Contamination of water bodies/ water courses	(vii) Control measures as silt fencing, vegetative barriers etc
			(viii) Avoiding disposal of liquid wastes into natural water courses
B6.3	Maintenance at construction camp	Collection of rainwater in construction camps	(ix) Temporary drains during construction
		Waste water from labour camps	(x) Disposal of waste water into soak pits

S. No.	Activity and Sub Activity	Impact/s	Measure/s
		Contamination of soil	(xi) Removal of oil / other chemical spills & wastes
B6.4	Cutting embankments of surface water bodies	Impact on the drainage flows in and out of the water body	(xii) Restoration of drainage channels
		Embankment stability	(xiii) Design of slopes of the water bodies, slope protection etc
B7.0	Sub-Base & Base courses		
B7.1	Granular sub-base	Extensive extraction of quarry materials	(i) Use of locally available materials
B7.2	Wet mix macadam	Extensive water requirement	(ii) Scheduling the activity in wet months
			(iii) Avoiding conflict of uses due to water extraction from construction
B7.3	Shoulders treatment	Movement of Machinery for compaction	(iv) Restricting movement on adjacent lands
B8.0	Culverts and Minor Bridge Works	Interruption to water flow	(i) Provision of diversion channels
		Pollution of water channels during construction	(ii) Control of sediment runoff
		Safety of Workers	(iii) Mandatory use of Personal Protective Equipment
B9.0	Surfacing		
B9.1	Bituminous surface	Worker's safety during handling of hot mix	(i) Mandatory use of Personal Protective Equipment
		Damage to vegetation (burning/ cutting)	(ii) Avoiding use of wood as fuel for heating bitumen
			(iii) Hot mix plant location on waste lands
		Contamination due to bituminous wastes	(iv) Safe disposal of bituminous wastes
		Impacts on Air quality	(v) Ensuring compliance of hotmix plants with the CPCB emission standards

S. No.	Activity and Sub Activity	Impact/s	Measure/s
B9.2	Concrete surfacing for roads crossing built up areas	Contamination of surroundings due to concrete mixing	(vi) Mixing concrete at designated locations away from habitation and agriculture lands
B10.0	Road furniture/Signage	-Nil-	To be provided as per design
B11.0	Shoulder protection	Requires material extraction from quarries	(i) Use locally available material
			(ii) Ensure that all shoulders are clear of debris or construction materials
B12.0	Enhancements	-Nil-	(i) To be included in DPR
B13.0	Monitoring environmental conditions	-Nil-	(i) To be as per the codes of environmental practice
C	Post Construction Activities		
C1.0	Clearing of construction camps		
C1.1	Dismantling of campsite	Waste generation at the construction site	(i) Disposal of waste at designated locations (ii) Restoration of site to original or better condition
C1.2	Campsite rehabilitation	Change of land use due to setting up of construction camp	(ii) Campsite to be restored to its original condition as per the rehabilitation plan
			(iii) Restoration of top soil
C2.0	Clearing of Water Channels, side drains and culverts	Generation of debris & silt	(i) Removal of Debris and disposal
C3.0	Rehabilitation of borrow areas	-Nil-	(i) Top soil restoration, revegetation