

Draft Environmental and Social Management Framework - Solar PV Park

December 2015

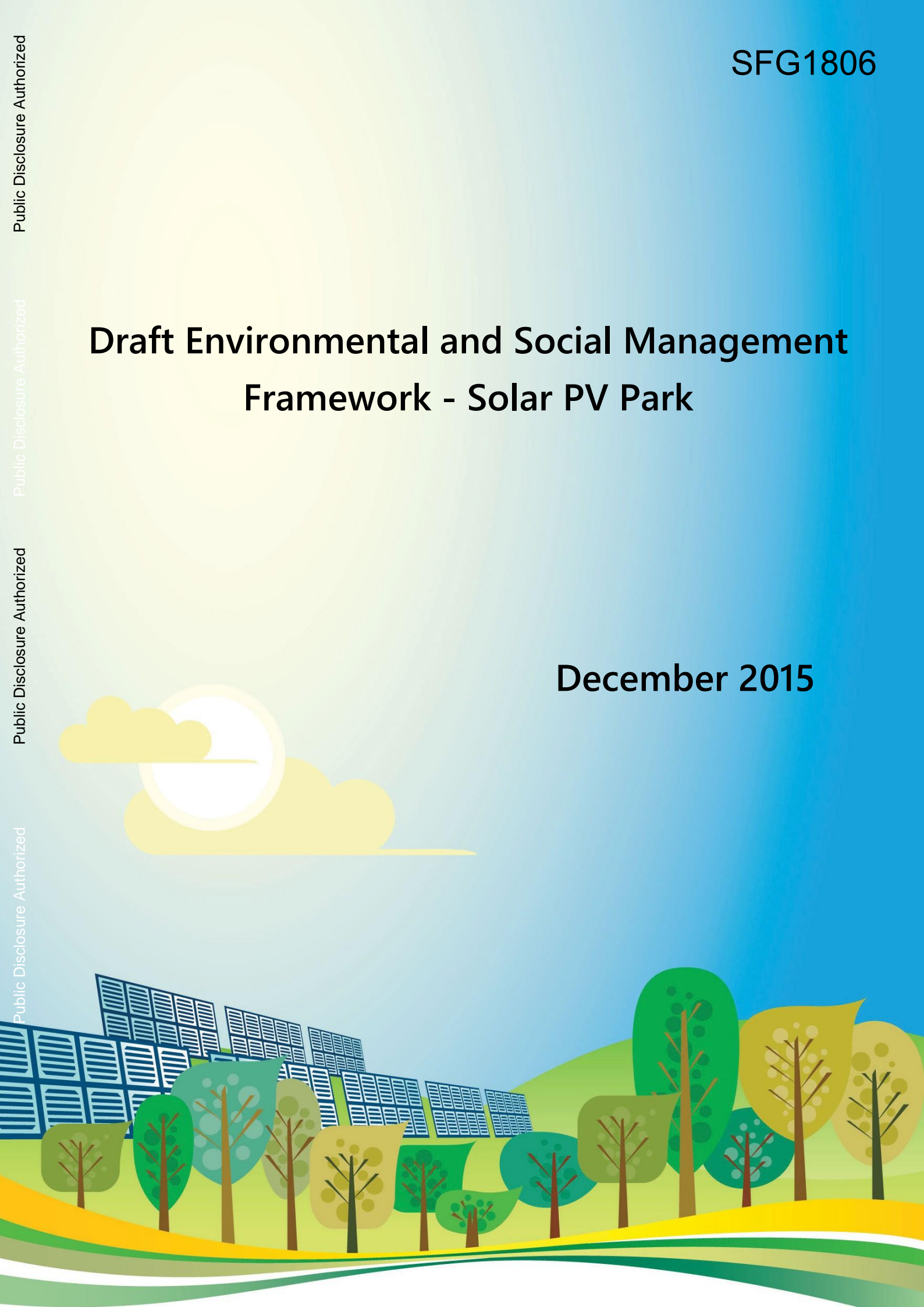


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1 PROGRAM OVERVIEW

1.1 India's Solar Program

The Jawaharlal Nehru National Solar Mission (JNNSM) is a major initiative of the Government of India to promote ecologically sustainable growth while addressing India's energy security challenge with active participation from the States. It will also constitute a major contribution by India to the global effort to meet the challenges of climate change. The objective of the Mission is to establish India as a global leader in solar energy, by creating the policy conditions for its large scale diffusion across the country as quickly as possible. The Mission had set a target, amongst others, for deployment of grid connected solar power capacity of 20,000 MW by 2022 to be achieved in 3 phases (1000 MW in first phase up to 2012-13, 9000 MW in second phase from 2013 to 2017 and 10,000 MW in the third phase from 2017 to 2022). Currently, the Government of India is considering to substantially scaling up targets of solar capacity additions in the country to 100 GW by year 2022.

The mission aims at reducing the cost of solar power generation in the country and to achieve grid tariff parity by year 2022 through (i) long term policy measures; (ii) large scale deployment goals; (iii) aggressive R&D; and (iv) domestic production of critical raw materials, components and products. Currently the mission is in Phase - 2 (2013 – 2017) of its implementation. Phase-I of JNNSM (2010-13) has generated huge interest in the solar sector wherein Grid connected and off-grid projects were commissioned throughout the country. Achievements of Phase-I have exceeded the target set for the period.

The Phase-2 of Jawaharlal Nehru National Solar Mission focuses more on a state-led solar power growth through setting up of solar ultra-mega power projects, solar parks and facilities, and promoting new financing models for implementation through private sector participation. The success of JNNSM and state solar policies will proceed on the basis of the technology advancements and cost reduction, which will be necessary for achieving the target of 20,000 megawatts of grid-connected solar power.

World Bank (WB) intends to partner in the efforts of the Ministry of New and Renewable Energy (MNRE), Government of India (GoI) to rapidly scale-up the solar installations in the country through a long term engagement in the program.

India is endowed with vast solar energy potential. About 5,000 trillion kWh per year energy is incident over India's land area with most parts receiving 4-7 kWh per sq. m per day. Hence both technology routes for conversion of solar radiation into heat and electricity, namely, solar thermal and solar photovoltaic, can effectively be harnessed providing huge scalability for solar in India. Solar also provides the ability to generate power on a distributed basis and enables rapid capacity addition with short lead times. From an energy security perspective, solar is the most secure of all sources, since it is abundantly available. Theoretically, a small fraction of the total incident solar energy (if captured effectively) can meet the entire country's power requirements. It is also clear that given the large proportion of poor and energy un-served

population in the country, every effort needs to be made to exploit the relatively abundant sources of energy available to the country. While, today, domestic coal based power generation is the cheapest electricity source, future scenarios suggest that this could well change.

1.2 Concept of Solar Park¹

The solar park is a concentrated zone of development of solar power generation projects and provides developers an area that is well characterized, with proper infrastructure and access to amenities and where the risk of the projects can be minimized. Solar Park will also facilitate developers by reducing the number of required approvals. Large size projects have a potential to bring down the cost of Solar Power. Therefore, Ultra Mega Solar Power Projects having capacity of 500 MW or above have been planned in India. Large chunks of land are available in some States for solar park development. There are some developers who are keen to individually take up very large projects. Land has so far been identified in Gujarat, Madhya Pradesh, Rajasthan, Telangana, Andhra Pradesh, Arunachal Pradesh, Karnataka, Kerala, Uttar Pradesh, Meghalaya, Nagaland, Punjab, Tamil Nadu, Andaman & Nicobar Islands and Uttarakhand. Smaller parks in Himalayan & other hilly States where contiguous land may be difficult to acquire in view of the difficult terrain are also being considered. Smaller parks are also being considered in States where there is acute shortage of non-agricultural lands.

MNRE has rolled out a scheme plans to set up 25 solar parks, each with a capacity of 500 MW and above; thereby targeting around 20000 MW of solar power installed capacity. These solar parks will be set up within a span of 5 years commencing from 2014-15 and the solar projects may then come up as per demand and interest shown by developers. At the State level, the solar parks will enable the States to bring in significant investment from project developers, meet its Solar Renewable Purchase Obligation (RPO) mandate and provide employment opportunities to local population. The State will also reduce its carbon footprint by avoiding emissions equivalent to the solar park's installed capacity and generation. Further, the State will also avoid procuring expensive fossil fuels to power conventional power plants.

The solar park will provide a huge impetus to solar energy generation by acting as a flagship demonstration facility to encourage project developers and investors, prompting additional projects of similar nature, triggering economies of scale for cost reductions, technical improvements and achieving large scale reductions in Greenhouse Gas emissions. Some Ultra Mega Solar Power Projects may be set up in these Parks or the entire park may individually be an Ultra Mega Solar Power Project.

1.3 Introduction to Environmental and Social Management Framework (ESMF)

The environmental and social management framework being prepared for utility scale Solar Park projects shall aid in screening, assessment, management of environmental and social impacts at an early stage in project planning. This document shall act as guidance for satisfactory assessment and management of environmental and social impacts at sub-project level through appropriate measures during the planning, design, construction and operation phases of various

¹ Source: <http://mnre.gov.in/file-manager/UserFiles/Solar-Park-Guidelines.pdf>

investments. The framework will identify the adverse environment and social impacts and provide specific guidance on the policies and procedures to be followed for environmental and social assessment along with roles and responsibilities of the implementing agencies.

The document consists of a set of methodologies, assessment procedures and measures to facilitate adequate environmental and social risk & impact management related to the proposed solar UMPP / parks financed by World Bank Group.

1.4 Objective of Environmental and Social Management Framework (ESMF)

The overall goal of the ESMF is to ensure that decision making in subsequent stages of the project is informed and influenced by environmental and social considerations for each of the sub-projects, many of which are still to be identified. It aims to integrate environmental and social concerns into the project's design and implementation. In order to achieve this, main objectives of the ESMF are:

- I. To establish clear procedures and methodologies for the environmental and social planning, review, approval and implementation of subprojects to be financed under the Project;
- II. To specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to subprojects;
- III. To determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF;
- IV. To establish the Project funding required to implement the ESMF requirements; and
- V. To provide practical information resources for implementing the ESMF.

1.5 Structure of Report

The document essentially comprises of the following sections:

- Social and Environmental Baseline for sample sub-projects
- Environment and Social Regulatory Framework applicable for the program
- Screening process / Impacts & Risks
 - a. Environment Management Framework
 - b. Resettlement Policy Framework
 - c. Indigenous People Policy Framework
 - d. Gender and Social Inclusion
- Public Consultations / Grievance redress mechanism
- Project Appraisal, Monitoring and Reporting Arrangements
- Institutional Arrangements
- Training and Capacity Building for ESMF

2 BASELINE – CASE STUDY SUB-PROJECTS

The following subsections help in identification of the likely environmental and social impacts of the investments in sample sub-projects. This will facilitate early evaluation of such adverse impacts and integrate suitable mitigation measures during planning stage itself. Based on the review of the sample sub projects and public consultations conducted in proposed sites, following are the typical associated impacts with similar solar power projects in India.

The sub-projects are expected to be spread across the states of Madhya Pradesh & Karnataka and may extend to other states in later phase of development. The Bank financing would mainly be in development of land and basic infrastructure for generation of solar power through involvement of a private developer under the PPP Model.

The ESMF document has been prepared based on review of sample case studies carried out for Rewa (Madhya Pradesh) and Pavagada (Karnataka) sites covering secondary data on different environmental and social components, review of environmental and social issues and consultation with different stakeholders. The objective of the above exercise was:

- I. To establish environmental and social baseline condition for the site at a broad level.
- II. To understand type and distribution of environmentally and socially sensitive features in and around the proposed site.
- III. Preliminary identification of environmental and social impacts likely to be triggered due to the project activities.
- IV. To assess the applicable regulations and policies.
- V. Consultations with the project affected persons.

2.1 Project Site Description

Brief description of the two sample case studies reviewed for preparation of the ESMF document is depicted in the table below:

Sr No	Particulars	Description - PAVAGADA	Description - REWA
1	Project Villages Location	Thirumani, Balasamudra, Vollur, Kyathaganacherlu, Rayacharlu	Badwar, Barseta Desh, Barseta Pahar, RamNagar Pahar and Etar Pahar
2	Tehsil	Pavagada	Gurh
3	District Name / State	Tumkur, Karnataka	Rewa, Madhya Pradesh
4	Location Coordinates	14°13' N to 14°20' N 77°23' E to 77°30' E	24° 27' 1" N to 24° 29' 47" N 81° 31' 38" E to 81° 37' 31" E

Sr No	Particulars	Description - PAVAGADA	Description - REWA
5	Climatic Zone	Warm & Humid	Humid subtropical climate zone
6	Average Elevation	800 meter above MSL	360 meter above MSL
7	Road Accessibility	MDR to Taluk Headquarters; SH to Tumkur	National Highway – 75; <i>Connecting Rewa town (north side) and Sidhi town (south side)</i>
8	Nearest Airport	Bengaluru Airport (200 kms)	Allahabad Airport (160 kms)
9	Nearest Railway Link	100 km at Anantpur (Andhra Pradesh) and 140 km at Bellary Junction (Karnataka)	Rewa (30 kms – aerial distance) – district headquarters
10	Land Availability	4850 ha land to be pooled on long-term lease basis (30 year) from private owners	A total of about 1500 Ha with an estimated 82% government land and balance private land to be acquired
	Key Social Issues	<ul style="list-style-type: none"> • Loss of livelihood for landless labourers working in agricultural fields. • Annual Lease rentals low as compared to similar land procurements in other areas. • Loss of access rights to common property resources. 	<ul style="list-style-type: none"> • Involuntary resettlement and loss of livelihood • Loss of access rights • Relocation of built up structures • Loss of livelihood for landless labourers working in agricultural fields.
	Key Environmental Issues	<ul style="list-style-type: none"> • Protection of existing surface water resources / natural drainage. • Presence of wildlife in vicinity. • Waste management including hazardous waste disposal • Pre-construction stage activities impacting topography, drainage and slope. • Water recycling / ground water recharge considering scarcity of water resource. 	<ul style="list-style-type: none"> • Protection of existing surface water resources / natural drainage. • Waste management including hazardous waste disposal. • Pre-construction stage activities impacting topography, drainage and slope. • Water recycling / ground water recharge considering scarcity of water resource.
11	Water Requirement	72 Million litres per cleaning of PV Panels	Estimated at 1.55 MLD
12	Proposed capacity	2000 MW, fixed tilted solar panels	750 MW, fixed tilted solar panels
13	Site Conditions	A few scattered trees, almost flat to sloping hard surface	A few scattered trees, almost flat to sloping hard surface

Sr No	Particulars	Description - PAVAGADA	Description - REWA
14	Power evacuation	POWERGRID's 765kV station at Madhugiri (aerial distance 70 kms) <i>(Actual alignment yet to be established)</i>	Vindhyachal - Jabalpur 400 KV line (airborne distance of 30 kms) <i>(Actual alignment yet to be established)</i>
15	Soil Characteristics	red sandy soil and red loamy soil	rich clayey to gravelly, mixed red and black soil
16	Seismic Zone	Zone IV	Zone II & Zone III Border

The detailed description of the baseline environmental and social parameters is provided in **Annexure-1** for reference.

3 NATIONAL AND STATE REGULATORY FRAMEWORK

Solar Ultra Mega Power Project (Solar UMPP) are not covered under the ambit of EIA Notification 2006 and does not require prior EIA clearance but these would require consent to establish and operate under the Air and Water Acts from the State Pollution Control Board ensuring that the site development does not have any adverse impacts. The applicable policy and regulatory framework applicable for the solar UMPP is discussed in the following sections:

3.1 State Pollution Control Board Regulations

The Central Pollution Control Board (CPCB) notification dated June 02, 2014 classifies solar renewable power projects of all capacities under the green category of industries. The industries or projects have been classified in three broad categories viz. Red, Orange and Green in decreasing order of severity of pollution. The evacuation related activities (responsible for laying power evacuation line, connectivity to national grid and NOC from relevant departments) would need to be considered separately for environmental and social impacts. Table below presents a checklist of the likely to be applicable legislations:

Acts/Rule/Policy	Year	Objective	Applicability to this Project	Responsible Agency
Environmental (Protection) Act	1986	To protect and improve the overall environment.	All environmental legislation is covered in this umbrella Act	MoEFCC Gol; CPCB; State Pollution Control Board
Environment Impact Assessment Notification	2006	To provide environmental clearance to new development activities following environmental impact assessment	Applicable Only for sub-projects located in Eco-sensitive Zone	State Environmental Impact Assessment Authority(SEIAA)
Indian Forest Act	1927	To check deforestation by restricting conversion of forest areas into non forest areas.	In case of acquisition of Reserved Forest Area or Protected Forest	State Forest Department / MoEF, Regional Office
The Forest (Conservation) Act	1980			
The Forest (Conservation) Rules	1981			
Wild Life (Protection) Act	1972	To protect wildlife through certain of National Parks and Sanctuaries.	The project either located inside the boundary of Wildlife Sanctuary or National Park/Tiger reserves.	State Forest Department and National Board For Wildlife, Gol.
National Forest Policy (Revised)	1952/ 1988	To maintain ecological stability through preservation and restoration of biological diversity.	For clearing of forest/ felling of Trees	Forest Department, Gol
Water (Prevention and Control of Pollution) Act	1974	To control water pollution by controlling discharge of pollutants as per the prescribed	NOC for establishment and operation during construction	State Pollution Control Board

Acts/Rule/Policy	Year	Objective	Applicability to this Project	Responsible Agency
		standards.		
Air (Prevention and Control of Pollution) Act	1981	To control air pollution by controlling emission of air pollutants as per the prescribed standards.	NOC for establishment and operation during construction	State Pollution Control Board
Ancient Monuments and Archaeological Sites and Remains Act	1958	Conservation of cultural and historical remains found in India.	For the project located within 300 m from such features	Archaeological Dept. GOI, Indian Heritage Society and Indian National Trust for Art and Culture Heritage (INTACH).
Batteries (Management and Handling) Rules	2001	The Act defines the requirements for disposal of used batteries for bulk users. The developers in sub-project would be likely bulk users.	Yes, if batteries are used for storage of power before being supplied to the national grid.	State Pollution Control Board
The Electricity Act	2003	Laws relating to generation, transmission, distribution, trading and use of electricity, promotion of efficient and environmentally benign policies.	The national grid connectivity is being undertaken as a separate project and not covered under the ESMF scope.	Power Grid
Permission for storage of hazardous chemical from CPCB		Applicable in case of storage and Import of Hazardous Chemical	Construction stage (Prior to initiation of any work)	Developer
Permission for extraction of Ground water		Applicable for construction and operations stage	Construction & Operations stage (Prior to initiation of installation of Bore wells and abstraction of water from such source)	Developer for construction/operations stage & JV Company
Or Use of Surface water sources for construction/operation stage		Applicable for construction and operations stage	Operations stage to meet the O&M requirements	Developer for construction/operations stage & JV Company
Acts and Regulations governing LA & Social Issues				
Right to fair compensation and transparency in land acquisition, rehabilitation and Resettlement Act	2013	Fair compensation for acquisition of immovable assets; Resettlement of displaced population due to LA and economic rehabilitation of all those who are affected due to land acquisition.	Yes, as private land will be acquired for solar parks as is the case in Rewa	Revenue Department
MP Consent Land Purchase Policy	2014	The government agencies requiring land for various infrastructure projects can acquire land with the mutual consent	The policy will facilitate speedy acquisition of land and the PAPs will get the	Revenue Department

Acts/Rule/Policy	Year	Objective	Applicability to this Project	Responsible Agency
		of the land owners as it saves time, ensure timely payment of land value to owners and the procedures are less cumbersome. The objective is to acquire land from owners with their consent and making them understand the social and economic benefits as a result of the project.	compensations as per the provisions of the policy in timely manner.	
Karnataka G.O. on Land Reforms / Land Lease	2014	The GO aims to facilities the transfer and conversion of agricultural land for Solar PV projects on long term lease basis	This would be applicable in state of Karnataka. These incentives help in reduction of overall timeframe for clearance.	SPPD
Seventy Third Constitution Amendment Act,	1992	The Act enables participation of Panchayat level institutions in decision-making. Panchayats at the village level will be involved for preparation and implementation of the project.	Yes, for any sub project located in panchayat area	Department of Panchayati Raj, State Government
The Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act	2006	Grants legal recognition to the rights of traditional forest dwelling communities, partially correcting the injustice caused by the forest laws. Makes a beginning towards giving communities and the public a voice in forest and wildlife conservation	Yes, if sub-project is located in customary forest land including reserved and protected forests; protected areas and also community forest.	Ministry of Tribal Affairs, GOI and State Department of Tribal Welfare

3.2 Indian Labour Laws

All the workers are governed by the relevant Indian labour laws as stated below. The Developer shall undertake the requisite license from Labour Commissioner prior to initiation of any works onsite. Some of these are directly relevant during the construction stage of the proposed sub-projects:

Applicable Acts	Coverage Provisions
Minimum Wages Act 1948	The act ensures minimum wages for each category of workers
Child Labour (Prohibition and Regulation)	Prohibits employment of children below 14 years

Applicable Acts	Coverage Provisions
Act, 1986	of age
The Labours Act 1988	Ensure health and safety of construction workers
The Factories Act, 1948	Ensures Health and safety considerations of workers
Workmen's Compensation Act, 1923	Ensure fair compensation in case of injury by accidents during the course of employment
Contract Labour (Regulation and Abolition) Act, 1970	Ensure basic welfare measures to be made available to the contract workers by the employer
The Building and other Construction Workers Act, 1996	Ensure safety measures at construction work site and other welfare measures such as canteens, first-aid facilities, ambulance, housing accommodation for Workers near the Workplace etc

3.3 Land Availability / Procurement for Sub-projects

The private land shall be procured within the framework of "The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013" (LA Act 2013) and the state policies on procurement of private land to ensure that there are no adverse impacts on the owners whose land is being procured under the project.

The review of sample sub-projects in two states has the following applicable state legislations wherein two different models have been adopted. In the state of Madhya Pradesh, the selection of available government land parcels has been given priority and private land acquisition has been only limited to ensuring site contiguity whereas the state of Karnataka has adopted a long term lease model wherein private land parcels are acquired on a 30 year lease to developer for generation of solar power. For this the state of Karnataka has modified the land reforms act and formulated a policy to facilitate the setting up of a solar UMPP / Park.

3.3.1 Madhya Pradesh State Solar Policy

GoMP notified its policy "Implementation of Solar Power based Projects in Madhya Pradesh, 2012 (Policy 2012). The Policy 2012 has defined the maximum limit of land as 3.0 Hectares per MW for land use permission for government land, if available, for setting up Solar Power Plant in Madhya Pradesh. In case of land owned by Revenue Department or any other State Government Department, the New & Renewable Energy Department shall take possession of the land and subsequently give permission for use of land to the concerned Developer (whose project has been accorded administrative approval). For procurement of private land the state Government could adopt "Consent Land Purchase Policy of the GoMP" dated November 12, 2014. The Policy provides for procurement of minimum required private land for the project/ part of the project from the owners with the mutual consent. The owner shall be paid consideration amount which shall include amount for land as per the prevailing Collector Guideline Rates and the amount equal to value of immovable assets on the procured land. The land owner shall also be eligible

for one time consolidated amount equal to the consideration amount payable in the form of rehabilitation grant.

3.3.2 Karnataka State Solar Policy 2014- 2021

Under this policy, it is proposed to meet the solar power capacity addition targets through different segments which are Grid connected utility scale projects and grid connected roof top projects. The following are the key features relevant to the current baseline study:

- I. As per the policy document, GoK contemplates to facilitate the conversion of land for solar projects by amending section-95 of the Land Reforms Act.
- II. GoK contemplates time bound permissions and for vesting Deputy Commissioners with full powers to approve purchase of agricultural lands u/s 109 of Land reforms Act for Development of Solar projects.
- III. As per the policy, developers will be allowed to start project execution without waiting for formal approval on filing application for conversion of agricultural land for setting up of solar power projects on payment of specified fees.
- IV. Solar PV projects shall be exempted from obtaining clearances of pollution control board as per the Karnataka Solar Policy 2014 – 2021.

In addition to the above two states, various other states have also notified their state specific solar policy, these include:

Sr No	State	Solar Policy
1.	Andhra Pradesh	Andhra Pradesh Solar Power Policy, 2015
2.	Chhattisgarh	Chhattisgarh State Solar Energy Policy, 2012-17
3.	Gujarat	Gujarat Solar Power Policy, 2015 notified on 13 th August, 2015
4.	Haryana	Haryana Solar Power Policy, 2014 notified on 4 th September, 2014
5.	Jharkhand	Jharkhand Solar Policy, 2015 notified on 10 th August, 2015
5.	Himachal Pradesh	Himachal Pradesh Solar Power Policy, 2014
6.	J&K	J&K Solar Power Policy notified on 18.03.2013
7.	Karnataka	i) Karnataka Solar Policy, 2011-16 notified on 01.07.2011 ii) Karnataka Solar Policy, 2014-21 notified on 22.05.2014
8.	Kerala	Kerala Solar Energy Policy, 2013 notified on 25.11.2013
9.	Madhya Pradesh	Madhya Pradesh Solar Power Policy, 2012 notified in 2012
10.	Odisha	Draft Solar Policy, 2013 notified in 2013
11.	Rajasthan	i) Rajasthan Solar Energy Policy, 2011 notified on 19 th April, 2011 ii) First Amendment dated 09.08.2011 iii) Second Amendment dated 18.09.2012
12.	Tamil Nadu	Tamil Nadu Solar Energy Policy, 2012 notified in 2012
13.	Telangana	Telangana Solar Power Policy 2015
14.	Uttarakhand	Uttarakhand Solar Energy Policy, 2013 notified on 27.06.2013

Table below presents a comparative of the various state solar policies in India. Water requirements have not been dealt in any of the policies and land availability has been the prime responsibility of the developer in majority of the policies.

	Policy	Capacity	Cross Subsidy Charge	Wheeling Charge	Bank Guarantee	Metering	Land
1	Gujarat Solar Power Policy 2015	Maximum of 50% of sanctioned load	Exempted	As applicable to normal open-access consumers; 50 % rebate given to projects registered under REC	INR 25 lakhs per MW	As per Central Electricity Authority	Developer responsible for obtaining the land for setting up and operating solar power project
2	Andhra Pradesh Solar Power Policy, 2015	Power plants with capacity 1000 KWp allowed at single location	Exempted	Exempted	Information Not Available	Apply online to Discoms for installation of meters	Developer responsible for obtaining the land for setting up and operating solar power project
3	Chhattishgarh State Solar Energy Policy 2012	Information Not Available	Exempted	As per CSERC regulations	Information Not Available	Information Not Available	Developer responsible for obtaining the land for setting up and operating solar power project
4	Rajasthan Solar Energy Policy 2014	Information Not Available	Information Not Available	Exempted	INR 10 lakhs per MW	Discom will develop a suitable and comprehensive consumer friendly IT application for metering	Developer will be allowed to purchase agriculture land for developing solar power plant in accordance with provisions of Rajasthan Imposition of Ceiling on Agriculture Holding Act, 1973; Other private land may be acquired under Ceiling Act, 1973
5	The Karnataka Solar Policy 2014-2021	Between 1 MW – based on transmission evacuation capacity	Charges applicable as per KERC norms	Charges applicable as per KERC norms	INR 3 lakhs – INR 5 lakhs per MW	Information Not Available	Information Not Available
6	Policy for Implementation of Solar Power based projects in Madhya Pradesh	0.025 MW – 100 MW	Exempted for a period of 10 years	A grant of 4% is given by the state, while the remaining is borne by developer	INR 5 lakhs per MW	Developers will install metering equipment at their own cost. They will be according to stipulations made by MPPTCL	Information Not Available
7	Tamil Nadu Solar Energy Policy 2012	Information Not Available	100% exemption for a period of 5 years	As per orders of Tamil Nadu Electricity Regulatory Commission	Information Not Available	Information Not Available	Information Not Available

3.3.3 Land Reforms Act – Karnataka

The Karnataka Land Revenue (Amendment) Act, 2015 (12th August 2015) states that “(10) If any occupant of any agriculture land assessed or held for the purpose of agriculture wishes to divert such land or part thereof for the purpose of setting up of solar power generation in accordance with Karnataka Solar Policy 2014-21 issued in G.O EN 21 VSC 2014 dated 22.05.2014 which has been approved by State and Central Government and which has been approved by the Competent Authority, the permission applied for conversion of such land shall be deemed to have been granted for that purpose so long as they use for purpose for which permission is granted subject to payment of the conversion fine and all such other fees payable if any, in this regard.”

If the government revenue land is recorded as forest land with small and minor trees in the revenue records or it is defined as a forest land as per Revenue Department, then the applicant will have to take permission, as per provisions of Forest Conservation Act 1980, from concerned authorities.

3.4 Relevant World Bank Group Safeguard Requirements

3.4.1 World Bank safeguard Requirements

The implementation of the World Bank Operational Policies seek to avoid, minimize or mitigate the adverse environmental and social impacts, including protecting the rights of those likely to be affected or marginalized by the proposed project. Based on the information collated by the consultants during the baseline study, following OP's are likely to be triggered and would require adequate measures to address the safeguard concerns.

World Bank Safe Guard Policies	Objective	Applicability	Safeguard Requirements
OP 4.01 Environmental Assessment	The objective of this policy is to ensure that Bank financed projects are environmentally sound and sustainable.	The environmental issues will be addressed adequately in advance. An integrated Environmental Screening and Environmental Assessment (EA) with Environmental Management Plan (EMP) will be developed to manage environmental risks and maximize environmental and social benefits wherever it is applicable.	EIA and/or EMP required.
OP 4.04 Natural Habitats	The policy recognizes that the conservation of natural habitats is essential for long-term sustainable development. The Bank, therefore, supports the protection, maintenance and rehabilitation of natural habitats in its project financing, as well as	This policy may be triggered by the Project due to activity requiring forest/ wildlife lands, locating close to the natural habitats with the potential to cause significant adverse impact or degradation of natural	EIA and EMP required

World Bank Safe Guard Policies	Objective	Applicability	Safeguard Requirements
	policy dialogue and analytical work. The Bank supports and expects the Borrowers to apply a precautionary approach to natural resources management to ensure environmentally sustainable development	habitats whether directly (through construction) or indirectly (through human activities induced by the project).	
OP 4.36 Forests	This policy focuses on the management, conservation, and sustainable development of forest ecosystems and resources. It applies to project that may have impacts on (a) health and quality of forests; (b) affect the rights and welfare of people and their level of dependence upon forests and projects that aim to bring about changes in the management, protection or utilization of natural forests or plantations, whether they are publicly, privately or community owned. The Bank does not support the significant conversion or degradation of critical forest areas or related critical natural habitats.	Impact of construction activities on Forest areas required to be taken care of. Generally diversion of reserve forest will be avoided, however the roadside trees along state highways being declared as protected forest, and roadside tree felling will attract the provision of Forest (Conservation) Act. The forest related issues, avoidance/ minimization of forest loss and its management should be integrated with EA study and EMP.	Forest land diversion Application has to be prepared and submitted to forest department. The issue of forest loss and its mitigation/compensatory measures is required to be integrated in EIA study and EMP.
OP/BP 4.12 Involuntary Resettlement	The objective of this policy is to avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs. Furthermore, it intends to assist displaced person in improving their former living standards; community participation in planning and implementing resettlement; and to provide assistance to affected people, regardless of the legality of title of land	There will be need for limited land acquisition resulting in: relocation or loss of shelter, loss of assets or access to assets; loss of income sources or means of livelihood. This policy applies to all components of the project that result in involuntary resettlement, regardless of the source of financing including projects that are carried out, or planned to be carried out, contemporaneously with the project.	Resettlement Action Plan in consultation with the community and project authorities
OP/BP 4.10 Indigenous People	This policy aims to protect the dignity, right and cultural uniqueness of indigenous people; to ensure that they do not suffer due to development; that they receive social and economic benefits	This policy may be triggered if there are indigenous people in the project area; when potential adverse impacts on indigenous people are anticipated; and if indigenous people are among the intended	Indigenous people development Plan

World Bank Safe Guard Policies	Objective	Applicability	Safeguard Requirements
		beneficiaries.	
OP/BP 4.11 Physical Cultural Resources	This policy aims at assisting in the preservation of cultural property, historical, religious and unique natural value-this includes remains left by previous human inhabitants and unique environment features, as well as in the protection and enhancement of cultural properties encountered in Bank-financed project.	This policy may be triggered by sub-projects where cultural property, historical, religious and unique natural value-this includes remains left by previous human inhabitants and unique environment features may be affected due to project.	Application has to be prepared and submitted to Archaeological department in case any impact is envisaged due to the project. The impact on such features should be integrated with EIA study and included in EMP

3.5 IFC Performance standards

As per the proposed implementation arrangements under the project, the private developer shall play a lead role in the success of the project implementation and shall be undertaking the setting up of infrastructure for energy generation. The IFC performance standards apply to private sector projects and provide instruments to manage the operations of projects in an environmentally and socially acceptable manner. The performance standards are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities. The following performance standards are likely to be applicable:

Performance Standards	Applicability
Assessment and Management of Environmental and Social Risks & Impacts / Performance Standard 1	● Yes ○ No
Labour and Working Conditions / Performance Standard 2	● Yes ○ No
Resource Efficiency and Pollution Prevention / Performance Standard 3	● Yes ○ No
Community Health, Safety, and Security / Performance Standard 4	● Yes ○ No
Land Acquisition and Involuntary Resettlement / Performance Standard 5	● Yes ○ No
Biodiversity Conservation and Sustainable Management of Living Natural Resources / Performance Standard 6	○ Yes ● No
Indigenous Peoples / Performance Standard 7	● Yes ○ No
Cultural Heritage / Performance standard 8	○ Yes ● No

Performance Standard 1 establishes the importance of

- (i) Integrated assessment to identify the environmental and social impacts, risks, and opportunities of projects;
- (ii) effective community engagement through disclosure of project-related information and consultation with local communities on matters that directly affect them; and

- (iii) Client's management of environmental and social performance throughout the life of the project.

Performance Standards 2 through 8 establish objectives and requirements to avoid, minimize, and where residual impacts remain, to compensate/offset for risks and impacts to workers, Affected Communities, and the environment. While all relevant environmental and social risks and potential impacts should be considered as part of the assessment, Performance Standards 2 through 8 describes potential environmental and social risks and impacts that require particular attention.

Where environmental or social risks and impacts are identified, the client is required to manage them through its Environmental and Social Management System (ESMS) consistent with Performance Standard 1.

Performance Standard 1 applies to all projects that have environmental and social risks and impacts. Depending on project circumstances, other Performance Standards may apply as well. SPPD is encouraged to apply the ESMF to all their solar PV sub-project activities, regardless of financing source.

The sub sections below provide a brief the objectives of each of the performance standards:

3.5.1 Assessment and Management of Environmental and Social Risks & Impacts

The objectives of the performance standard 1 are:

- i. Identify and assess environmental and social impacts in the project's area of influence.
- ii. Avoid, minimize, mitigate or compensate for adverse impacts.
- iii. Ensure that affected communities are engaged on issues that may affect them.
- iv. Promote improved environmental and social performance through effective management systems

3.5.2 Labour and Working Conditions

The objectives of the performance standard 2 are:

- i. Establish, maintain and improve the worker-management relationship.
- ii. Promote fair treatment and equal opportunity for workers, in compliance with national laws.
- iii. Protect workforce by addressing child labour and forced labour.
- iv. Promote safe working conditions and protect / promote the health of workers

3.5.3 Resource Efficiency and Pollution Prevention

This Performance Standard outlines a project-level approach to resource efficiency and pollution prevention and control in line with internationally disseminated technologies and practices. The objectives of the Performance Standard 3 are:

- i. To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities.
- ii. To promote more sustainable use of resources, including energy and water.
- iii. To reduce project-related GHG emissions.

3.5.4 Community Health, Safety and Security

While acknowledging the public authorities' role in promoting the health, safety, and security of the public, this Performance Standard – 4 addresses the client's responsibility to avoid or minimize the risks and impacts to community health, safety, and security that may arise from project related-activities, with particular attention to vulnerable groups. The objective of Performance Standard 4 is:

- i. Avoid or minimize the risks to, and impacts on, the health and safety of the local community over the project life cycle, from both routine and non-routine circumstances.
- ii. Ensure that the safeguarding of personnel and property is carried out in a legitimate manner that avoids or minimizes risks to the community's safety and security.

3.5.5 Land Acquisition and Involuntary Resettlement

Performance Standard 5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. The objective of Performance Standard 5 is:

- i. Avoid or minimize involuntary resettlement whenever feasible by exploring alternative project designs.
- ii. Mitigate adverse social and economic impacts by providing compensation for loss of assets at replacement cost and ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation and informed participation of those affected.
- iii. Improve or at least restore livelihoods and living standards of displaced persons.
- iv. Improve living conditions among displaced persons through provision of adequate housing with security of tenure at resettlement sites.

Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in physical or economic displacement.

3.5.6 Indigenous Peoples / Performance Standard 7

Performance Standard 7 recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population.

As a consequence, Indigenous Peoples may be more vulnerable to the adverse impacts associated with project development than non-indigenous communities. This vulnerability may include loss of identity, culture, and natural resource-based livelihoods, as well as exposure to impoverishment and diseases. The objective of Performance Standard 7 is:

- i. To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples.
- ii. To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimize and/or compensate for such impacts.
- iii. To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner.
- iv. To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout the project's life-cycle.
- v. To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in this Performance Standard are present
- vi. To respect and preserve the culture, knowledge, and practices of Indigenous Peoples.

4 IMPACT IDENTIFICATION PROCESS AND METHODOLOGY

The sub-project shall be appraised based on the step-by step process beginning with the screening stage. On the one hand the screening checklist will help identify sub-projects which have substantial social and environmental impacts requiring appropriate mitigation measures, whereas on the other hand it will help identify sub-projects which have insignificant environmental and social consequences and the environmental review process could be limited in scope.

The project will use a structured approach to environmental and social management to allow the project development process, follow the hierarchy of avoidance, minimization, compensation/mitigation for negative impacts and enhancement of positive impacts where practically feasible and advantageous. The overall process is depicted in a flow chart below:

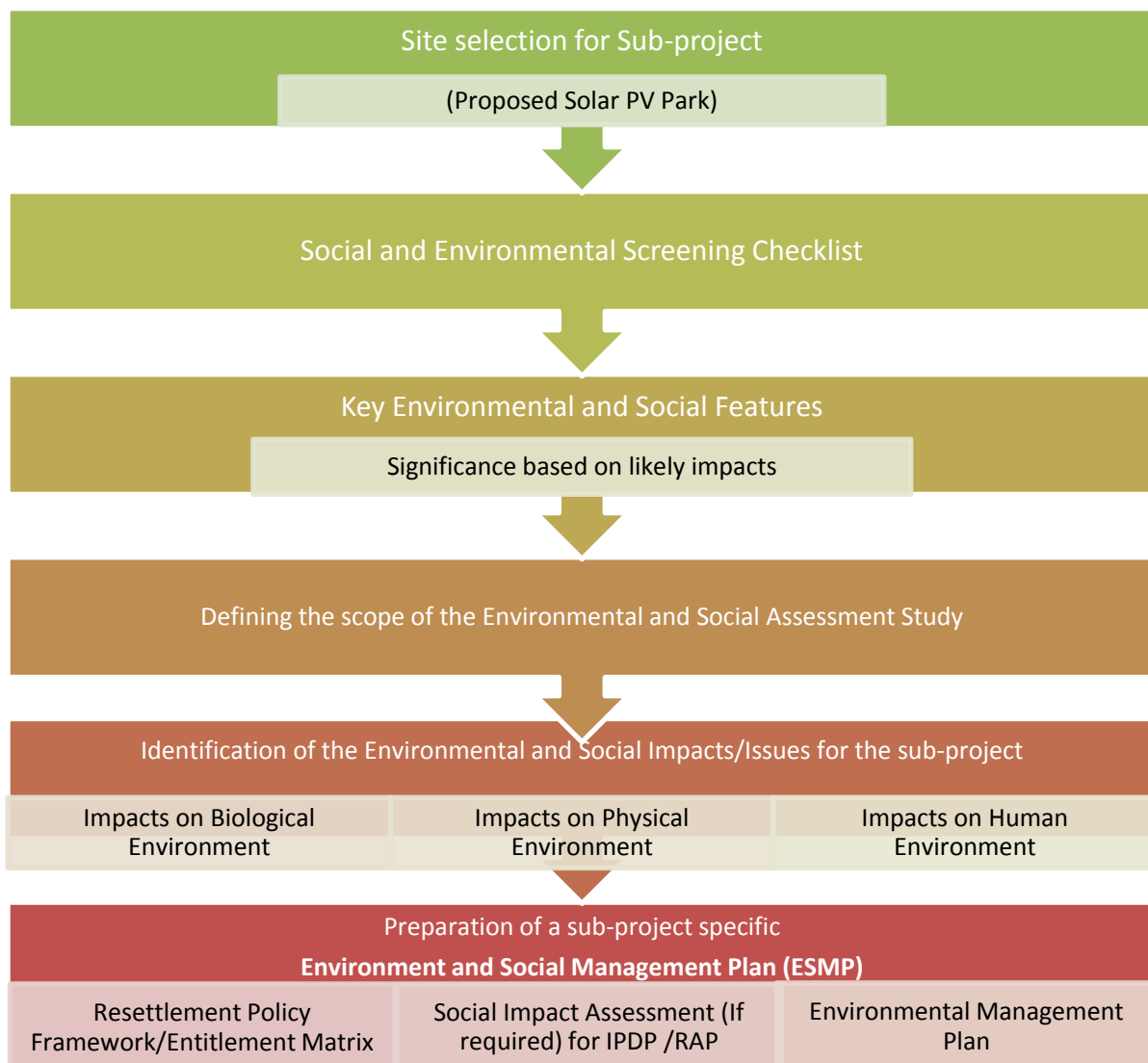


Figure 1: ESMF Process

Following sections describe what needs to be done at each stage of the overall project life – sub-project selection, design of the project supported interventions, implementation of the project activities, and reporting on progress.

4.1 Screening

This step will involve review of the available environmental information about the sub-project and its surrounding areas. It would help identify issues to be verified during reconnaissance site visits and also provide a preliminary idea regarding the nature, extent, and timing of environmental issues that would need to be handled during the subsequent stages. It will also help identify opportunities for avoidance and/or minimization early in the project cycle so that the design process can be informed appropriately. The steps to be followed include the following:

- I. Confirm the presence of environmentally sensitive areas from secondary sources or preliminary site observations.
- II. Verify the extent of applicability of GoI, and World Bank policies in sub-project activities
- III. Identify potential negative and positive impacts; provide clarity on which issues need to be investigated more comprehensively during preparation of Environmental & Social Impact Assessment that will be done during the design stage.

This should help with sequencing of sub-projects, and factoring in timelines like those associated with regulatory clearance processes into project implementation.

The process of preparing the environmental and social screening checklist and scoping will typically cover:

- i. Describing the need for the project, i.e. the issues or problems to be addressed.
- ii. Describing the proposed project or options.
- iii. Identifying the potential environmental and social impacts of the projects or options.
- iv. Undertaking a preliminary evaluation of the potential environmental and social impacts of the project or options.
- v. Consulting local officials on the project or options, and the potential impacts.
- vi. Describing the preliminary consultation with relevant agencies and local community. The focus of these consultations would be informing the local community, reviewing the likely issues and problems.
- vii. Selecting a preferred project option or short list of options. The appraisal of the available DPR / Feasibility study reports should be included from an environmental and social perspective.
- viii. Identifying the planning approvals which are likely to be required from MOEFCC, SPCB and other regulatory agencies.
- ix. Determining the type and scope of EIA study. ToR for an Environmental and Social Assessment Study of the preferred option or a short list of options.

While more extensive data is likely to be required for E&SIAs, some data on baseline conditions will generally be required for screening to compare the environmental and social impacts of project options and to assess the extent of any environmental and social impacts.

The robustness of screening will often be dependent on the quality of data on baseline conditions and the assessment of projects induced environmental and social impacts. The assessment of baseline conditions should take into account:

- i. Past trends in environmental and social quality
- ii. Community preferences and competing demands for resources
- iii. Other current or proposed development programs in the project area.

Good maps are generally required to indicate the spatial relationship between the sources and recipients of the environmental and social impacts. Google Earth and other open source satellite imagery data can also be very useful in indicating changes in land use and other environmental features.

The following checklist will help identify the screening components that need to be investigated in detail during the preliminary stages of evaluation or to conclude that insignificant adverse impacts are anticipated.

S. No.	Environmental & Social Features	Status / Availability in & around site (10-kms)	Significance (based on likely impact)	Remarks / Description
Physical Environment				
	Drainage pattern / Conditions			
	Surface Water Resources			
	Erosion Prone stretches			
	Slope percentage			
	Topography			
Biological Environment				
	National Park / Wildlife Sanctuary			
	Non-NP/WLS areas			
	Migratory routes			
	Reserved Forests			
	Large Trees / Woodland			
	Protected Forests			
	Presence of endangered species / habitat areas			
	Ecologically sensitive areas			
Human Environment				
	Settlements / Built-up Environment			
	Sensitive Receptors			
	Drinking Water sources			
	Physical cultural Resources – Religious			

S. No.	Environmental & Social Features	Status / Availability in & around site (10-kms)	Significance (based on likely impact)	Remarks / Description
	Physical cultural resources – community			
	Underground utility lines like electricity lines, pipelines for gas, etc			
	Agricultural land parcels / land fertility levels			
	Defence Installations / Airports			
	Damage to existing infrastructure, public utilities, amenities etc.			
	Presence of Indigenous / vulnerable communities			
Social Environment				
	Land acquisition of private land leading to loss of shelter and livelihood			
	Any loss / reduction of access to traditional dependent communities (to areas where they earn for their primary or substantial livelihood).			
	Adverse impacts to women, including economic and safety concerns			
	Involuntary land taking resulting in loss of income; livelihood; sources of livelihood; loss of access to common property resources and / or private residential and/or property resources.			
	Any specific gender issues			
	Possible conflicts with and/or disruption to local community			
	Significant issues raised by the stakeholders during consultation			

The results of the above checklist will help identify the scope of the ESA study and timeframe required for obtaining the regulatory clearances (if any). The environmental and social safeguard screening shall occur during the project preparation stage as a soon as the fairly accurate site location is known for the sub-project. The formulation of the sub-project specific ToR shall be done based on the screening outputs highlighting environmental and social components that require detailed assessment during the ESA stage. A generic ToR for ESA study is attached in Annexure-1 for similar solar PV sub-projects.

EIAs may take the form of Comprehensive EIAs or Rapid EIAs depending on whether the environmental and social impacts can be readily mitigated. Comprehensive EIAs generally need to rely on data collected over a 12-month period whereas Rapid EIAs can rely on data collected in one season (other than the monsoon season) to facilitate a speedier assessment process.

Rapid EIAs are generally acceptable if the analysis of environmental and social impacts is sufficient for the purposes of selecting a preferred project option and determining appropriate measures for mitigating environmental and social impacts. The outcome of a Rapid EIA process will sometime determine if a Comprehensive EIA is required and, if this is likely, then it will often be more efficient to prepare a Comprehensive EIA from the outset.

Having identified the probable adverse impacts, the next step shall involve quantification of the impacts and developing action plans to mitigate such adverse impacts.

4.2 Environmental and Social Assessment

The ESA is the most commonly used tool to ensure that environmental and social aspects are considered during decision making – by influencing design to avoid /minimize, and where unavoidable mitigating the residual adverse impacts and/or enhancing positive impacts. It also provides a platform for getting views from stakeholders including the directly affected population to improve the design. Detailed guidance regarding the EIA/SIA contents is available in the OP4.01 /OP 4.12 of World Bank. The key steps in preparing the ESIA would involve:

- I. Defining the scope in line with the already completed screening, and the Operational Policies of the World Bank. The template ToR provided in Annexure -1 shall act as a guidance document.
- II. Obtaining information from primary or secondary sources regarding the current conditions of environmental and social features within the influence area of the sub-project. Generally the impact zone for environmental impacts is considered as 10 kms buffer along the proposed site whereas for the social impacts, it is considered up to 2 kms buffer along the proposed site or even lesser depending upon the location of PAP/ settlements / land parcels that are likely to be impacted due to the project either directly or indirectly.
- III. Carrying out effective stakeholder consultations, including along the proposed sub-project impact zone. This shall also include landless labourers / marginalized communities whose livelihood may be impacted due to sub-project.
- IV. Identifying feasible alternatives for proposed layout changes, use of alternative technologies etc. in close collaboration with the Design team.

- V. Identifying and estimating quantitatively (to the extent possible), key impacts and classify these for ease of understanding and determination of significance (by severity, duration, project phase, etc.)
- VI. Selecting measures that can help manage these impacts in cost effective manner – reduce the negative ones; and enhance positive ones and estimate the residual impacts, including those that may need further study.
- VII. Clarifying the institutional arrangements, any capacity building needs, and resource requirements including grievance redress mechanism and budget as part of the preparation of environmental and social management plan.

The following will be the outline contents for each ESIA under the project:

- I. Executive Summary
- II. Project Description
- III. Policy, Legal and Institutional Framework
- IV. Current (Baseline) Environmental & Social Status
- V. Potential Environmental & Social Impacts
- VI. Analysis of Alternatives
- VII. Stakeholder Consultations, including Community Consultations / Public Disclosure
- VIII. Environmental & Social Management Plan (including additional studies, if any)
- IX. Grievance Redressal Mechanism
- X. RAP / IPDP (if required) depending upon the likely R&R impacts else would be addressed under the EMP document.
- XI. Recommendations and Conclusion
- XII. Annexes (including data sources, List of EIA preparers, consultation details, etc.)

4.3 Environmental & Social Impacts

Environmental and social impact analysis of a project (or project options) consists of comparing the expected changes in the biophysical and socioeconomic environment with and without the project. For each potential environmental or social impact, the analysis should predict the nature and significance of the expected impacts or explain why no significant impact is anticipated.

Based on the information available for the selected case studies / sub-projects for the development of ESMF, key environmental issues / impacts identified that would require detailed investigations during the ESA stage are listed below. A summary of the issues and potential impacts is presented in the following paragraphs to guide preparation of sub-project ESIA and ESMPs.

4.3.1 Impacts on Biological Environment

Wherever forest land is acquired for solar PV projects would require the appropriate clearance procedures to be adopted for conversion of land use / compensatory land allocation.

Most of these projects are expected in remote / barren land parcels with minimal tree cover. The protection of existing tree cover is crucial in such areas and should not lead to removal of trees.

This may lead to increased dust in these areas. Minimum alteration to existing ground cover in such sites is a chosen strategy.

The proposed solar parks would be completely fenced entities with controlled access thereby minimizing the risks of wild animals getting wounded. The ESA study shall establish the wildlife species paths/ habitat if any applicable in and around the proposed site. e.g. Deer / Black Buck has been spotted by the villagers in close vicinity of the proposed solar park site. The ESA study shall establish the status of wildlife in vicinity of the proposed site and adequate mitigation measures to ensure no conflicts / poaching occurs during the various stage of project development.

There will not be any anticipated impacts on the ambient air quality. The sub project is likely to have minor impacts due to increased noise levels during the construction phase.

4.3.2 Impacts on Land Form

The proposed solar PV parks will require water for construction and operation stage. The water for construction stage would be a one-time requirement whereas the requirement of water during the operations stage would be a continuous one.

Most of the proposed sub-projects would be in remote areas with arid conditions and scarcity of water generally. The ESA study should provide a detailed assessment of the water requirements during the operations phase along with an adequate assessment of the existing available water resources.

4.3.3 Impacts on Human Environment

Based on the review of the solar PV project, land is made available either on lease or through direct purchase. This may adversely impact on the livelihood of the family owner. During the review of the sub-projects, it has also been found that landless labourers working in agricultural field are likely to be adversely impacted due to loss of livelihood options. The ESA study should provide a detailed assessment of such PAP's and suggest appropriate mitigation measures. The options to offer job in the solar park based on the individual capability / experience should be a chosen strategy.

The proposed solar park would be a fully fenced entity wherein access would be restricted. The proposed site may include tracks /pathways which are frequently used by the local villagers while performing their day-to-day activities. Such tracks need to be clearly identified during the ESA stage in consultation with the local stakeholders so that the same can be included into the project layout plan or alternative route / tracks may be identified if it is unavoidable.

The above generic impacts identified shall need to be mitigated to minimize or eliminate negative impacts. The following sub section provides a brief on the generic ESMP measures:

4.4 Environmental & Social Management Plan

An Environmental & Social Management Plan (ESMP) is the key document focused on implementation, after the potential impacts have been identified. It ensures that the project

impacts are reduced to an acceptable level during implementation of the sub-project. Thus, ESMP becomes the document for ensuring that all the preceding analysis is used to preserve/improve overall environmental quality within the influence area of the project.

The ESMP 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 including SPPD, Contractors etc. A contract specific ESMP would facilitate integration with the bidding documents for the Developer. The building blocks of an ESMP are:

- I. 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 – Pre-construction, Construction/ Implementation and Operation
- II. Enhancement plans for positive impacts
- III. Monitoring Plan with indicators, mechanisms, frequency, locations,
- IV. Budgetary allocations for all the above activities.
- V. Institutional arrangements for each activity and mitigation measures.
- VI. Implementation schedules for each activity and its integration with the sub-project implementation timelines.
- VII. Reporting procedures, including for redressing grievances related to environmental and social issues.

A summary of the likely issues and potential impacts & mitigation measures is presented in the following table to guide preparation of upcoming ESMPs as more sub-projects get identified. The generic ESMP is only a guideline document and would require addressing the sub-project anticipated impacts & proposing mitigation measures:

Table 1: Generic ESMP

No	Activity	Potential Environmental & Social Impacts	Proposed Mitigation	Institutional Responsibilities
	Pre- Construction Stage	Loss of land / and other physical assets	<ul style="list-style-type: none"> Carrying out analysis of alternatives to avoid / minimize involuntary taking of land and other physical assets. Compensation at replacement value 	SPPD
		Loss of livelihood	<ul style="list-style-type: none"> Preferable employment with developer Alternative livelihood options and training for skill enhancement CSR activities to be undertaken by developer will ensure alternative livelihood opportunities 	SPPD / Developer
		Loss of Access rights	<ul style="list-style-type: none"> Project to ensure through analysis of alternatives that access enjoyed by the community remains intact. In case of unavoidable circumstances, alternative access will be provided. 	SPPD
		Loss of Common property resources	<ul style="list-style-type: none"> To the extent possible will be avoided Impacted CPR's will be replaced by the project. 	
	Site Preparation	Soil Erosion; Alteration of natural drainage;	<ul style="list-style-type: none"> Construction facilities to be placed 500 meters from water bodies, natural flow paths; Minimize cut & fill operations, the site clearing and grubbing operations should be limited to specific locations only. Any disruption of socially sensitive areas with regard to human habitation and areas of cultural significance will be avoided. The existing slope and natural drainage pattern on the site should not be altered. Trees on private lands are felled or damaged during construction operations, compensation shall be paid to the owner as determined by the forest/horticulture departments. The contractor shall ensure that site preparation activities do not lead 	Developer

No	Activity	Potential Environmental & Social Impacts	Proposed Mitigation	Institutional Responsibilities
			to disruption of activities of the local residents.	
	Construction Activity	Noise from construction works	<ul style="list-style-type: none"> Construction activity shall be restricted to daytime as far as possible to avoid disturbance to surrounding areas. Wherever required, personal protective equipment such as ear plugs, earmuffs, helmets etc. should be provided to the persons working in high risk areas. 	Developer
	Construction Activity	Dust	<ul style="list-style-type: none"> Construction machinery shall be properly maintained to minimize exhaust emissions of CO, SPM and Hydrocarbons. Dust generated as a result of clearing, levelling and site grading operations shall be suppressed using water sprinklers. Dust generation due to vehicle movement on haul roads / access roads shall be controlled through regular water sprinkling. 	Developer
	Construction Activity	Safety Issues	<ul style="list-style-type: none"> Prevent entry of unauthorized personnel and proper storage and control of hazardous materials on site. The site shall be secured by fencing and manned at entry points 	Developer
	Laying of transmission lines	Exposure to safety related risks	<ul style="list-style-type: none"> Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites 	SPPD and Developer
	Water for Construction	Conflicts with existing users due to scarcity of resource base.	<ul style="list-style-type: none"> A detailed assessment of the available resources and consent of the local panchayat for withdrawal of water from existing surface water sources shall be taken. If ground water is withdrawn, adequate approvals from the GWB / SPCB department need to be undertaken before setting up bore wells. 	Developer
	Road safety and traffic management plan	Increase in road accidents	<ul style="list-style-type: none"> The movement of heavy machinery and equipment's shall be restricted to defined routes. Proper signage's to be displayed at major junctions. 	Developer

No	Activity	Potential Environmental & Social Impacts	Proposed Mitigation	Institutional Responsibilities
			<ul style="list-style-type: none"> Road diversions and closures to be informed well in advance to the local residents. Vehicular movement to be controlled near sensitive locations viz. schools, colleges, hospitals identified along designated vehicular transportation routes. 	
	Base Camp Construction Activity – Labour Camp Management	Conflicts with the local residents	<ul style="list-style-type: none"> Alternate arrangement for fuel wood, heating and cooking should be made to meet fuel wood requirement of the labour Work force should be prohibited from disturbing the flora, fauna including hunting of animals, Wildlife hunting, poaching and tree felling. Adequate facilities ensuring sanitation for labour camps. Treated Water will be made available at Site for Labour drinking purpose. Adequate accommodation arrangements for labour 	Developer
	Waste Management	Land and water pollution due to indiscriminate waste disposal	<p>Preparation of a waste management plan covering the following aspects</p> <ul style="list-style-type: none"> Construction and commissioning of solar park Temporary accommodation facilities for labour Waste generation from equipment maintenance / vehicles on-site. The scrap material generated from erection of structures and related construction activities will be collected and stored separately in a stack yard and sold to local recyclers. Hazardous waste viz. waste oil etc will be collected and stored in paved and bounded area and subsequently sold to authorized recyclers. Applicability of the Hazardous Waste Management Rules 	SPPD

The site specific ESMP would need to be prepared for specific sub-projects. An ESMP document should include:

- 1) Lists of all project related activities and impacts, for each stage of the development of Projects, i.e., for the design, construction and maintenance stages
- 2) A list of regulatory agencies involved and their responsibilities
- 3) Specific remedial and monitoring measures proposed for each stage
- 4) A clear reporting schedule, including discussion of what to submit, to whom, and when
- 5) Cost estimates and sources of funding for both one-off costs and recurring expenses for implementation of the EMPs.

ESMP shall deal with the construction and operations stage of the sub-project. The extent and timing of mitigation actions should be based on the significance of the predicted impacts.

Some mitigation measures can be incorporated into the design of the project and can largely resolve the potential impacts of a project, e.g., drainage, access roads. Other measures require an on-going implementation plan to ensure that proposed actions are carried out at the correct times, that environmental measures such as slope protection are maintained, and that prompt remedial actions are taken when the initial measures are not fully effective.

4.5 Resettlement Policy Framework

The guidelines are prepared for addressing the issues limited to the project for resettlement and rehabilitation of the PAPs. The project specific policy shall be developed based on the Right to Fair Compensation and transparency in land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act, 2013 subject to subsequent supplements by state governments and World Bank Operational Policy 4.12 on involuntary resettlement

4.5.1 Broad Principles

The Policy aims to resettle and rehabilitate the affected persons on account of its sub projects in a manner that they do not suffer from adverse impacts and shall improve or at the minimum retain their previous standard of living, earning capacity and production levels. It is also the endeavor of the SPPD that the resettlement shall minimize dependency and be sustainable socially, economically and institutionally. Special attention will be paid for the improvement of living standards of marginalized and vulnerable groups.

This policy recognizes that involuntary resettlement dismantles a previous production System and a way of life, all such rehabilitation programs will adopt a developmental approach rather than the welfare approach. These guidelines details out the assistance in re-establishing the homes and livelihoods of the Project Affected People (PAP) during the course of projects.

- 1) All information related to resettlement preparation and implementation will be disclosed to all concerned, and community participation will be ensured in planning and implementation.
- 2) The principles of mutual consent and negotiated settlement will also be used for land acquisition as required.

- 3) The persons affected by the project who does not own land or other properties but who have economic interest or lose their livelihoods will be assisted as per the broad principles brought out in this policy.
- 4) Before taking possession of the acquired lands and properties, compensation and R&R assistance will be made to those who are available and willing to receive the entitlements in accordance with this policy.
- 5) There would be no/or minimum adverse social, economic and environmental effects of displacement on the host communities but if needed specific measures would be provided.
- 6) Broad entitlement framework of different categories of project-affected people has been assessed and is given in the entitlement matrix. Provision will be kept in the budget. However, anyone moving into the project area after the cut-off date will not be entitled to assistance.
- 7) Three tier appropriate grievance redress mechanism has been established at project level to ensure speedy resolution of disputes.
- 8) All activities related to resettlement planning, implementation, and monitoring would ensure involvement of women. Efforts will also be made to ensure that vulnerable groups are included.
- 9) All consultations with PAPs shall be documented. Consultations will continue during the implementation of resettlement and rehabilitation works.
- 10) As required, a Resettlement Action Plan will be prepared including a fully itemized budget and an implementation schedule.

The broad principles of the Resettlement and Rehabilitation (R&R) policy are as given below;

1. All negative impacts including displacement should be avoided or minimized wherever feasible by exploring all viable alternative project designs.
2. Where negative impacts are unavoidable, efforts should be made either to improve the standard of living of the affected persons or at least assist them in restoring their previous standard of living at no cost to them.
3. Ensure people's participation during the course of the project cycle.
4. Effort should be made towards the enhancement of the positive impact of the projects.

The project will broadly have three impacts that require mitigation measures. These are:

1. Loss of immovable assets viz., land, house, commercial establishments wells, ponds etc.
2. Loss of livelihood or income opportunities viz, for agriculture labours, helping hands in commercial establishments etc.
3. Impact on the community in terms of loss of common property resources.

The first two categories represent direct impacts on an identified population. The people likely to be affected will be surveyed and registered, and project monitoring and evaluation will compare long term impacts against baseline socio economic data.

The third category represents a group impact, where gains and losses of a group oriented nature are not quantifiable in terms of impact on the individual. Mitigation and support mechanism will be collectively oriented, and the monitoring will focus on impact on such groups.

The provisions of Rights to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and in case the State Government has specific policies for mutual consent and negotiated settlement, the provisions of such policy could be used subject to their adherence to the provisions are within the broad framework of the Act and the World Bank Safeguard Policies.

1. Support will be extended under the broad principles of this policy to meet the replacement value of the assets and loss of livelihood.
2. The policy further recognizes extension of support to non-titleholders for the loss of livelihood and replacement value for assets other than land.
3. The common property resources will be replaced as far as feasible and if not then assistance will be provided at replacement value to the group.

The implementation of solar projects would involve transportation of equipment during the installation phase and all efforts will be made during implementation to minimize any disturbance in the daily activities of the local people.

Before taking possession of the acquired lands and properties, all compensation, resettlement and rehabilitation would be made in accordance with this policy.

In case of displacement, resettlement sites will be developed as part of the project. In such circumstances care should be taken so that there is no/or minimum adverse social, economic and environmental effects of displacement on the host communities and specific measures would be provided in the Resettlement and Rehabilitation Action Plan (RAP) to mitigate any such impacts.

Before taking possession of acquired land, sufficient time would be provided to harvest the crop.

The implementation of the R&R Action Plan will be synchronized with the execution of works under the project.

The project will ensure that no civil works are initiated before compensation and assistance to affected population has been provided in accordance with this policy.

4.5.1.1 Definitions

The following definitions are used in the documents:

Cut-off Date: In the cases of land acquisition affecting legal titleholders, the cut-off date would be the date of issuing the publication of preliminary notification u/s 11(I) of RFCTLAR Act, 2013 & for the Non-Titleholders cutoff date would be the date of Census Survey.

Project Affected Person: Person who is affected in respect of his/her land including homestead land and structure thereon, trade and occupation due to construction of the project

Project Displaced Person: A displaced person is a person who is compelled to change his/her place of residence and/or work place or place of business, due to the project.

Projected Affected Family: Family includes a person, his or her spouse, minor children, minor brothers and minor sisters dependent on him. Provided that widows, divorcees and women deserted by families shall be considered separate families;

Explanation - An adult of either gender with or without spouse or children or dependents shall be considered as a separate family for the purpose of this Act.

Land Owner: Land owner includes any person -

Whose name is recorded as the owner of the land or building or part thereof, in the records of the authority concerned; or

Any person who is granted forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or under any other law for the time being in force; or

Who is entitled to be granted Patta rights on the land under any law of the State including assigned lands; or any person who has been declared as such by an order of the court or Authority.

Marginal Farmers: Marginal farmer means a cultivator with an un-irrigated land holding up to one hectare or irrigated land holding up to one half hectare, or as may be defined by the concerned state government.

Small Farmer: Small farmer means a cultivator with an un-irrigated land holding up to two hectares or irrigated land holding up to one hectare, but more than the holding of a marginal farmer, or as may be defined by the concerned state government.

Encroacher: A person who has trespassed Government/ private/community Land, adjacent to his or her land or asset to which he/she is not entitled and who derives his/her livelihood and housing there from prior to the cutoff date.

Squatter: A squatter is a person who has settled on publicly owned land for housing or livelihood without permission or who has been occupying publicly owned building without authority prior to the cutoff date.

Landless/Agriculture Labour: A person who does not hold any agriculture land and has been deriving his main income by working on the lands of others as sub-tenant or as an agriculture labour prior to the cut-off date.

Below Poverty Line: A household, whose annual income from all sources is less than the designed sum as fixed by the planning commission of India, will be considered to be below poverty line (BPL).

Vulnerable Person: The Vulnerable group may include but not be limited to the following:

Those people falling under Below Poverty line category as defined by the state government.

1. Member of Scheduled caste/tribe community/other backward community.

2. Women Headed households.
3. Senior citizen-person above the age of 60 years.
4. Landless
5. Village artisan

4.6 Resettlement Action Plan

In case the sub-project requires involves land acquisition against compensation or loss of livelihood or shelter, the client shall ensure that a satisfactory RAP has been prepared under the ESA study and shared with the affected person and the local community. The SPPD shall not start the works until compensation and assistance has been made available in accordance with the framework.

RAP document provides a link between the impacts identified and proposed mitigation measures to realize the objectives of involuntary resettlement. The RAPs will take into account magnitude of impacts and accordingly prepare a resettlement plan that is consistent with this framework for Bank approval before the sub-project is accepted for Bank financing.

- I. Sub-projects that will affect more than 200 people due to involuntary land taking and/or physical relocation and where a full Resettlement Action Plan (RAP) must be produced.
- II. Sub-projects that will affect less than 200 people will require an abbreviated RP (Resettlement Framework).
- III. The above plans will be prepared as soon as subproject is finalized, prior to Bank's approval of corresponding civil works bid document.
- IV. Projects that are not expected to have any land acquisition or any other significant adverse social impacts; on the contrary, significant positive social impact and improved livelihoods are exempted from such interventions.

Every- Resettlement Action Plan (RAP) prepared shall contain the following particulars.

- i. The extent of area to be acquired for the project, the name(s) of the corresponding village(s) and the method employed for acquiring land with the relevant documentation.
- ii. Village wise or municipality wise list of project affected families and likely number of displaced persons by impact category
- iii. Family-wise and the extent and nature of land and immovable property in their possession indicating the survey numbers thereof held by such persons in the affected zone;
- iv. Socio-economic survey of affected people including income/asset survey of PAPs.
- v. A list of agricultural labourers in such area and the names of such persons whose livelihood depend on agricultural activities;
- vi. A list of persons who have lost or are likely to lose their employment or livelihood or who have been alienated wholly and substantially from their main sources of occupation or vocation consequent to the acquisition of land and / or structure for the project;
- vii. Information on vulnerable groups or persons for whom special provisions may have to be made;
- viii. A list of occupiers; if any.

- ix. A list of public utilities and Government buildings which are likely to be affected;
- x. A comprehensive list of benefits and packages which are to be provided to project affected families by impact category;
- xi. Details of the extent of land available which may be acquired in settlement area for resettling and allotting of land to the project affected families;
- xii. Details of the basic amenities and infrastructure facilities which are to be provided for resettlement;
- xiii. The entitlement matrix;
- xiv. The time schedule for shifting and resettling the displaced families in resettlement zones;
- xv. Grievance redressal mechanism;
- xvi. Institutional mechanism for RAP implementation;
- xvii. Consultation strategy; a disclosure plan and a capacity building plan
- xviii. Monitoring and evaluation indicators and mechanism;
- xix. Budget; and
- xx. Any other particulars as the Administrator for Resettlement and Rehabilitation may think fit to include for the information of the displaced persons.

The RAP should be developed based on the Right to Fair Compensation and transparency in land Acquisition, Rehabilitation and Resettlement Act, 2013 including subsequent amendments; other applicable state regulatory requirements and World Bank Operational Policy 4.12 on involuntary resettlement. States have formulated various legislations pertaining to direct purchase of land / land for land exchange options, etc which shall be applicable depending upon the location of the sub-project.

4.7 R & R Benefits for Project Affected Families

The resettlement and rehabilitation (R&R) benefits shall be extended to all the Project Affected Families (PAF) whether belonging to below poverty line (BPL) or non-BPL. The details are to be provided in the entitlement matrix (presented below). Contractor will ensure that access to residences or business or agricultural land is not blocked during construction or subsequently. The easement rights for the villagers shall be ensured while planning the layouts for the solar parks. The NGO responsible for RAP implementation and M&E consultants will bring it to the notice of project authorities if contractor fails to do so.

For tribal the following provisions will be adhered to:

1. Each Project Affected Family of ST category shall be given preference in allotment of land.
2. Tribal PAFs will be re-settled close to their natural habitat in a compact block so that they can retain their ethnic/linguistic and cultural identity
3. The Tribal Land Alienated in violation of the laws and regulations in force on the subject would be treated as null and void and-the R&R benefits would be available only to the original tribal land owner.

Table: Entitlement Matrix

S. No.	Application	Definition of Entitled Unit	Entitlement	Details
A. Loss of Private Agricultural, Home-Stead & Commercial Land				
1	Land for Solar Project	Titleholder family. and families with traditional land Right	Compensation at Market value, Resettlement and Rehabilitation	<ul style="list-style-type: none"> a) 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. b) The land if allotted will be in the name of both husband and wife. c) 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. d) Refund of stamp duty and registration charges incurred for replacement land to be paid by the project; replacement land must be bought within a year from the date of payment of compensation to project affected persons. e) Subsistence allowance of Rs. 36000 as one time grant f) One time grant of Rs. 500,000 or annuity g) Compensation at market value for loss of crops if any
B. Loss of Private Structures (Residential/Commercial)				
2	Loss of Structure	Title Holder/ Owner	Compensation at Market value, Resettlement & Rehabilitation Assistance	<ul style="list-style-type: none"> a) Cash compensation for the structure at Market 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 RAY in urban area or Rs 100,000 in lieu off. The house if allotted will be in the name of both husband and wife. b) Right to salvage material from the demolished structures. c) Three months' notice to vacate structures. d) 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. e) 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. f) Subsistence allowance equivalent to Rs. 36000 as one time grant. g) Each affected family getting displaced shall get a one-time financial assistance of Rs 50,000 as shifting allowance. h) Each affected family that is displaced and has cattle, shall get financial assistance of Rs 25,000/- for construction of cattle shed. i) One time grant of Rs. 50,000 as resettlement assistance j) Each affected person who is a rural artisan, small trader or self-employed person and who has been

S. No.	Application	Definition of Entitled Unit	Entitlement	Details
				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. k) One time grant of Rs. 500,000
3	Structure	Tenants/ Lease Holders	Resettlement & Rehabilitation Assistance	a) Registered lessees will be entitled to an apportionment of the compensation payable to structure owner in case the lessee has erected any part of the structure as per applicable local laws. b) 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				
4	Standing Trees, Crops	Owners and beneficiaries (Registered/ Un-registered tenants, contract cultivators, leaseholders & sharecroppers	Compensation at market value	a) Three months advance notice to project affected persons to harvest fruits, standing crops and removal of trees. b) Compensation to be paid at the rate estimated by: i) The Forest Department for timber trees ii) The State Agriculture Extension Department for crops iii) The Horticulture Department for fruit/flower bearing trees. c) 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. d) 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 on Government land	Owners of Structures or Occupants of structures identified as per Project Census Survey	Resettlement & Rehabilitation Assistance	a) Non vulnerable encroachers shall be given three months' notice to vacate occupied land b) Vulnerable encroachers will be provided cash assistance at replacement cost for loss of structures as described in section 29 of the RFCTLARR Act 2013. c) 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. d) 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. e) All squatters (other than kiosks) will be eligible for one time grant of Rs 36000 as subsistence allowance.

S. No.	Application	Definition of Entitled Unit	Entitlement	Details
				<p>f) 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.</p> <p>g) 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.</p> <p>h) In case of Kiosks, only Rs. 5000 will be paid as one time grant.</p>
E. Loss of Livelihood				
6	Families living within the project area	Title Holders/ Non-Title holders/ sharecroppers, agricultural labourers and employees	Resettlement & Rehabilitation Assistance	<p>a) 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).</p> <p>b) Training Assistance of Rs 10,000/- for income generation per family.</p> <p>c) 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 and preference in the employment of semi-skilled and unskilled jobs in the project with adequate training for the job.</p>
F. Additional Support to Vulnerable Families				
7	Families within project area	As per definition of vulnerable	Resettlement & Rehabilitation Assistance	<p>One time additional financial assistance of Rs. 50,000.</p> <p>Squatters and encroachers already covered under clause 5 are not eligible for this assistance.</p>
G. Loss of Community Infrastructure/Common Property Resources				
8	Structures & other resources (e.g. land, water, access to structures etc.) within the project area	Affected communities and groups	Reconstruction of community structure and common property resources	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. damage to adjacent parcel of land / assets due to movement of vehicles for transportation	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'.

S. No.	Application	Definition of Entitled Unit	Entitlement	Details
			of equipment's, machinery and construction activities for infrastructure development.	
I. Resettlement Site				
10	Loss of residential structures	Displaced titleholders and non-titleholders	Provision of resettlement site/ vendor market	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 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.
J. Land on lease				
11	Titleholders	Land Owners/ Titleholders	Annual Lease rental for use of land	<ul style="list-style-type: none"> a) Annual Lease Rent as per pre agreed rate with the land owners giving consent for sparing their land for the project b) Provisions regarding the increase in lease rent on predetermined rates and timeframe c) Provisions related to loss of structure/ trees/ crops as per the provisions of Clause 2 and 4 respectively
12	Agricultural Labour	Non-Title holders/ sharecroppers, agricultural labourers and employees		As per Clause 6 above

This RPF will also be applicable to all components of the project that result in involuntary resettlement, regardless of the source of financing. It also applies to other activities resulting in involuntary resettlement that in the judgment of the Bank, are (a) directly and significantly related to the Bank-assisted project; (b) necessary to achieve its objectives as set forth in the project documents; and (c) carried out, or planned to be carried out, contemporaneously with the project.

4.8 Gender equality and Social Inclusion

Mainstreaming gender equity and empowerment is already a focus area in the project. In the sub projects, activities related to livelihood restoration will address women's needs. A Gender Development Framework is being designed under the project as part of ESMF which will help analyze gender issues during the preparation stage of sub project and design interventions. At the sub project level, gender analysis will be part of the social assessment and the analysis will be based on findings from gender specific queries during primary data collection process and available secondary data. The quantitative and qualitative analysis will bring out sex disaggregated data and issues related to gender disparity, needs, constraints, and priorities; as well as understanding whether there is a potential for gender based inequitable risks, benefits and opportunities. Based on the analysis, the specific interventions will be designed and if required gender action plan will be prepared. The overall monitoring framework of the project will include sex disaggregated indicator and gender relevant indicator.

The participation of beneficiaries and focus on poverty reduction are two other key determinants of the effectiveness and sustainability of any project. Any project must address the constraints on women's participation in project design, construction, and monitoring and evaluation (M & E). The project must also focus on the linkage between gender and poverty, by identifying, for example, households headed by females and those households' special needs. An adaptive, learning, and process-oriented approach works better than a blue print approach; continuous dialogue between the SPPD and the beneficiaries / PAPs is therefore important. Project beneficiaries are likely to have a stronger sense of ownership when the project gives them enough time, design flexibility, and authority to take corrective action. In this way, they find it easier to incorporate their earlier learning and negotiate with project staff and service providers. Therefore, a mechanism must be built into the project to allow such two-way interactions between the beneficiaries and the service providers.

Three major tools are used to identify and deal with gender issues in the project cycle: gender analysis, project design, and policy dialogue.

Gender analysis should be an integral part of the initial social assessment at the screening stage itself. The issues identified can be scaled up during the feasibility and detailed analysis can be carried out during the project preparation stage.

The project designs should be gender responsive based on the gender analysis, and should be included in the ESIA document. The findings and recommendations from the gender analysis during project planning and feedback from beneficiaries during implementation must be discussed thoroughly to determine the need for further action. Listed below are the key action points:

4.8.1 General Check list

1. Identify key gender and women's participation issues.
2. Identify the role of gender in the project objectives.

3. Prepare terms of reference (TOR) for the gender specialist or social development specialist of the client
4. Conduct gender analysis as part of overall Social Assessment.
5. Draw up a socioeconomic profile of key stakeholder groups in the target population and disaggregate data by gender.
6. Examine gender differences in knowledge, attitudes, practices, roles, status, wellbeing, constraints, needs, and priorities, and the factors that affect those differences.
7. Assess men's and women's capacity to participate and the factors affecting that capacity.
8. Assess the potential gender-differentiated impact of the project and options to maximize benefits and minimize adverse effects.
9. Identify government agencies and nongovernmental organizations (NGOs), community-based organizations (CBOs), and women's groups that can be used during project implementation. Assess their capacity.
10. Review the gender related policies and laws, as necessary.
11. Identify information gaps related to the above issues.
12. Involve men and women in project design.
13. Incorporate gender findings in the project design.
14. Ensure that gender concerns are addressed in the relevant sections (including project objectives, scope, poverty and social measures, cost estimates, institutional arrangements, social appendix, and consultant's TOR for implementation and M & E support).
15. List out major gender actions.
16. Develop gender-disaggregated indicators and monitoring plan.

4.8.2 Core Requirement for Mainstreaming Gender

1. All data should be disaggregated by gender, caste, ethnicity, location and age
2. Issues of division of labour, access to resources and decision making power (who is doing what, who has access to what, who makes the ultimate decision) have to be assessed for their gender differential impact on women and men of different social identity group.
3. Assessment of policies, programs, institutional arrangements, human resources issues and M&E system has to be done from a gender perspective of project, project authorities and community groups.

4.8.3 Steps of Gender Mainstreaming

Three major tools will be used to identify and deal with gender issues in the project cycle: initial gender assessment, gender action plan, and policy note. The initial gender assessment should be an integral part of the initial social assessment at the screening stage. The issues identified can be scaled up during the feasibility study and detailed analysis can be carried out during the detailed project report stage. The project design should be gender responsive based on the gender analysis, and should be included in the detailed project report in the form of a gender action plan. The findings and recommendations from the gender analysis during project

planning and feedback from beneficiaries during implementation must be discussed thoroughly to determine the need for further action.

Focus of intervention	Inputs and process indicators	Data source
Policy checklist	<ul style="list-style-type: none"> i. What are the requirements of the national gender equality policy, if any, and the executive support provided to it? ii. Which ministry focal point or unit is responsible for advocacy and gender inclusion at the policy and project level? iii. Does the Energy sector strategy address gender issues (labor issues, e.g. promotion of gender in labor-based work, participation of women in prioritization and design of works, measures to eliminate discriminatory labor or contracting practices, HIV/AIDS prevention and treatment) in its works and contracts? iv. Do solar policy and planning procedures explicitly take gender into account: identification of gender gaps and gender-specific needs, capacities, constraints, and opportunities inclusion of socioeconomic empowerment as an integral element? v. Are women and men civil society stakeholders consulted on policies and programs; included in teams analyzing policy and strategy; included in decision making? vi. Is there a system for monitoring the implementation of gender and other components of sector policies and strategies? vii. Sex disaggregation of beneficiary data and key gender indicators outreach and capacity building on gender and other social dimensions grants for addressing gender issues? viii. Are there training sessions on gender including gender-sensitive planning? ix. Is stakeholder consultation facilitated? x. Is there participation of implementing agencies or community organizations? xi. Are gender sensitization workshops held for men and women of power ministry / department staff and implementing agencies, and do they consider knowledge gaps in gender elements in the sector? xii. How many women are represented on gender boards and in works prioritization and decision-making forums related to the planning, implementation, monitoring, and evaluation of projects? 	Contract documents; ministry of new and renewable energy; ministry of women and child development; SPPD
Project cycle: Project identification, preparation, and design	<ul style="list-style-type: none"> i. Conduct a rapid assessment to identify and quantify potential gender-related issues and impacts affecting access, risks, benefits, and participation ii. Identify disadvantaged or vulnerable groups, including who they are, where they live, and their socioeconomic characteristics (scheduled castes, women-headed households, widows, disabled) iii. Examine the impacts of project on these groups iv. Identify the gender-specific implications of land acquisition and resettlement v. Identify gender-specific implications of employment opportunities to be created under the project vi. Identify gender-specific constraints in receiving information and providing feedback and complaints on the project vii. Discuss identified gender and other social issues in the project viii. Include both females and males affected by the project in stakeholder consultations ix. Use separate focus groups to enable women to voice their views separately from men x. Analyze the data collected to highlight gender differences in uses 	Stakeholder and beneficiary assessments: user satisfaction survey, project concept note, social assessments (household surveys and focus group discussions in project influence area), mid-term and end term evaluation surveys

Focus of intervention	Inputs and process indicators	Data source
	<p>and the underlying causes of women's and men's project related problems</p> <ul style="list-style-type: none"> xi. Examine relevant inter-sectoral linkages, such as access to health services, HIV/AIDS prevention, and access to markets and schools xii. Ensure that analysis of gender differences in needs, use, constraints, and access are included in the terms of reference for the social assessment xiii. Identify the gender-related issues that need to be addressed to ensure the effectiveness and sustainability of the project xiv. Develop approaches for addressing the gender-related issues identified and creating opportunities for equal access to project benefits for men and women, including training, organizational capacity building, grants programs, targets for women's participation xv. Develop indicators for measuring progress on gender-related issues within the relevant project components (e.g. construction works, institutional arrangements, land acquisition and resettlement benefits, privatization, livelihood restoration, awareness building, consultations, complaint handling) 	
Project cycle: Methodology	<ul style="list-style-type: none"> i. Desk review (secondary literature) ii. Review available information (e.g. statistics, gender analysis, documents of previous solar projects, if available or other projects involving acquisition for non-linear projects) in the project area and the socioeconomic profile of the target population iii. Review the relevant legal framework (e.g. inheritance law), policy framework (e.g. resettlement and rehabilitation), and institutional framework (e.g. current administrative system for land acquisition, compensation disbursement, grievance handling, awareness creation) and their gender implications iv. Review government programs for encouraging equal opportunities and participation of women in the project influence area v. Household surveys (primary survey) vi. Draw up gender-disaggregated socioeconomic and cultural profiles and identify the problems faced by and needs of the target population vii. Conduct group discussions, random interviews, and transect walks to study the activity pattern viii. Collect quantitative information ix. Participatory methodologies (e.g. participatory rapid appraisal) x. Collect qualitative information that cannot be collected through surveys (socio cultural norms, behavioral questions) xi. Define ways in which men and women beneficiaries and other stakeholders, especially poor women, can equally participate in the project xii. Map out the target areas and assess which are the most disadvantaged areas and sections of society (widows, female-headed households, disabled men and women) in terms of access to services and poverty level xiii. Identify major stakeholder groups and their positions xiv. Staffing xv. Ensure adequate gender balance in field teams xvi. Select field team members with gender awareness, local knowledge, cultural understanding, and willingness to listen 	Other projects in the country/state and gender policy documents, household surveys, national sample survey, latest census data, participatory rapid appraisal of target area, focus group discussions, consultations with beneficiaries
Project cycle: Data collection	<ul style="list-style-type: none"> i. Socioeconomic profile: Gender-disaggregated data ii. Demographic: Gender, sex ratio, caste, marriageable age, female- 	District, block, and village

Focus of intervention	Inputs and process indicators	Data source
	<p>headed households, migration trend, household size</p> <ul style="list-style-type: none"> iii. Economic: Income level and source, expenditure pattern and decision making, access to land and resources iv. Health: Population growth rate, infant and adult mortality rate, availability of medical facility, reproduction-related decision making, HIV/AIDS awareness v. Education: Literacy, school enrollment and dropout ratio, child labor vi. Status of women: Political representation and awareness, socio cultural perceptions and practices of men and women, domestic violence, trafficking, gender-discriminatory policies and laws, gender roles, responsibilities and gender division of labor in productive areas (e.g. agriculture, income-generating activities) and reproductive areas (e.g. household chores, child care), and time allocation for each responsibility vii. Fuel, fodder, water and sanitation viii. Availability, quantity, and quality of fuel and fodder, who collects fuel, fodder, and water for the family, sources of drinking and agricultural water, how men and women store and use water collected, dry season management, how far away these resources are located, time spent on collection of the resources, mode of transport used to collect the resources, availability of sanitation service (chargeable or not, who runs it) ix. Access, control, constraints x. How men and women differ in their access to and control of land, agricultural inputs, extension, markets, employment opportunities, and credit xi. Whether external assistance is provided to improve access and control, and by whom xii. Participation xiii. Factors affecting the level of participation of men vs. women, incentives and constraints, means of information dissemination about the project preferred by men vs. women, labor demand for men vs. women, which modes of participation men and women favor (e.g. decision making in planning, cash contribution, labor contribution for construction, training, financial management, organizational management) xiv. Perception of benefits and impacts xv. Men's and women's perceptions of positive and negative impacts of the project, how negative effects can be mitigated 	<p>census data, national sample survey data, health survey data, household surveys, focus group discussions, behavioral surveys, observation</p>
Project implementation: Gender action plan	<ul style="list-style-type: none"> i. Prepare gender action plan. Under this: ii. Undertake quality social and gender analyses. Identify constraints to participating and benefiting men and women; develop strategies for each component to ensure that men and women participate and benefit equally iii. Revisit gender design strategies at inception to develop a detailed gender action plan. The plan needs to be tested and reviewed early in implementation; identify detailed activities, targets, resources, and responsibilities for implementation iv. Gender action plan must be fully owned and understood by the executing agency. Use a participatory and flexible approach to developing the plan; a strong rationale that is directly linked to overall project objectives is needed for targeting and working with women v. Identify realistic targets linked to loan objectives. Targets and 	<p>Gender expertise, Discussion and participation with beneficiaries, separate focus group discussions with men and women, government departments, labor and employment laws, provisions in project and budget, learning</p>

Focus of intervention	Inputs and process indicators	Data source
	<p>strategies should enable step-by-step progress, bringing incremental changes and challenging culture without threatening it; linking targets to loan objectives helps all stakeholders to understand the rationale for focusing on women and helps monitoring of participation and benefits.</p> <p>vi. Include gender capacity building in the gender action plan. Both formal training and ongoing support and mentoring are needed for developing skills, ownership, and commitment.</p> <p>vii. Provide adequate skills and resources for implementation of gender action plan. Long-term gender specialists in the executing agency or project team and adequate resources for implementation of actions; nongovernmental organizations and other agencies contracted to implement project activities should have a demonstrated gender capacity.</p> <p>viii. Monitor and follow up gender-related targets and activities. Systematic follow-up to ensure that policy reforms and gender actions are implemented; routine monitoring and reporting; gender-sensitive indicators and gender-related risks must be included in project logical frameworks.</p>	approaches from good practice cases
Project implementation: Participation strategy	<p>i. Develop a participation strategy for men and women during project implementation and monitoring and evaluation:</p> <p>ii. Avoid overly high expectation of women's participation and develop a practical schedule for participation</p> <p>iii. Planning. Conduct women-specific consultation to take their views and suggestions on the design. Any mechanism established during the project design, such as grievance mechanisms, should have adequate representation of women</p> <p>iv. Construction. Ensure work conditions that are conducive to women's participation (e.g. gender-equal wage rates, construction season, toilet and child care facilities)</p> <p>v. Training options. Identify ways to link up with income generation, literacy, and other activities to support an integrated approach to poverty reduction and women's empowerment</p> <p>vi. Staffing, scheduling, procurement, and budgeting. Hire female project staff</p> <p>vii. Consider seasonal labor demand in scheduling civil works</p> <p>viii. If appropriate, set a minimum percentage of female laborers and prohibit the use of child laborers in the civil works contract</p> <p>ix. Ensure adequate and flexible budgeting to allow a learning approach (e.g. training budget, consulting service budget for women's organizations)</p>	Gender expertise, Discussion and participation with beneficiaries, separate focus group discussions with men and women, government departments, labor and employment laws, provisions in project and budget, learning approaches from good practice cases
Project cycle: Impact	<p>i. Establish whether men and women perceive positive and negative impacts of the project differently, and assess how the negative effects can be mitigated</p> <p>ii. Consider whether the benefits are likely to be distributed equitably</p> <p>iii. For disadvantaged or vulnerable groups, find out who they are, where they live, what are their socioeconomic characteristics (scheduled castes, women-headed households, widows, disabled), and how the project will affect them</p> <p>iv. Assess the gender-specific implications of the following:</p> <p>v. land acquisition and resettlement: extent of land being acquired</p> <p>vi. utility relocation: what and where</p> <p>vii. tree cutting: how many and local dependence</p> <p>viii. diversion of forest land: how much and local dependence</p>	Project monitoring reports, audits, group discussions, household survey, land tenure details
Monitoring and	i. Develop a feedback mechanism in which both males and females	Focus group

Focus of intervention	Inputs and process indicators	Data source
Evaluation: Feedback mechanism	<ul style="list-style-type: none"> have a voice ii. Disaggregate all relevant indicators by gender, such as number of women gaining access to credit, increase in women's income, and career prospects for project-trained women iii. Integrate sex-disaggregated beneficiary data and relevant measures of gender equality into the baselines and other routine monitoring and evaluation processes iv. Measure the impacts of the project components on women and men v. Assess the value added by women's participation in the project 	discussions, project monitoring reports
Monitoring and Evaluation: Gender-informed indicators	<ul style="list-style-type: none"> i. Develop gender-informed results indicators for monitoring. These include: ii. Increased income, employment, and entrepreneurship. Number of women and men employed in sector, number of women and men employed in solar power project; increased women's and men's income from produce marketed using project services. iii. Time saving and increased productivity. Reduced women's and men's time for domestic work (collection of water, fuel wood, food crop collection, fodder, etc.); increased productive time used for economic activities. iv. Improved affordability. Percentage increase of income among women and men; increased participation in decision making; number of women and men participating in community decision meetings; reduced incidence of harassment, crime, and human trafficking; increased awareness of HIV/AIDS transmission and prevention; number of women and men leading committees; number of women and men managers in agencies; women control their income and establish bank accounts in their names; increased recognition of women's contributions to the household and community 	Review of gender-informed results indicators

4.9 Indigenous Peoples Policy Framework

The Indigenous People (IPs) in India are categorized as tribal who often become vulnerable in development projects because of their cultural autonomy which is usually undermined and also because this group endure specific disadvantages in terms of social indicators of quality of life, economic status and usually as subject of social exclusion. The term "Indigenous Peoples" is used in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees:

- i. Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;
- ii. Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories
- iii. Customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and
- iv. An indigenous language, often different from the official language of the country or region.

There were no indigenous peoples identified in any of the case study sub-projects. There was presence of ST population in the case study sub-projects however they did not confirm to any of

the above criteria's and are a part and parcel of the dominant society and culture. Some of the issues directly related to Indigenous People in future sub-projects could be:

- i. Loss of agriculture income
- ii. Loss of employment of daily wagers in farms.
- iii. Loss of shelter
- iv. Loss of community facilities
- v. Physical displacement

Other Issues:

- i. Low level of agriculture productivity
- ii. Lack of employment opportunities
- iii. Low income levels
- iv. Poor health
- v. Low level of education
- vi. High levels of debt

In case of significant impacts being anticipated on the indigenous community, an IPDP need to be prepared incorporating following steps:

- i. Social screening to establish the presence of tribes in the project area or have collective attachment to the project area.
- ii. Based on a detailed social assessments establish baseline data on the tribal people (subsistence, employment, community networks) in the project area;
- iii. Review Acts / policy guidelines applicable in the respective states regarding tribal groups and also the central Acts / Policies;
- iv. Identify the impacts (both positive and negative) and prepare an IPDP;
- v. Disclose the draft IPDP

4.9.1 Screening

During the ESA stage of sub project, survey will be carried out based on group discussion with the communities in the sub project area in order to identify presence of any tribal group or any such group that have collective attachment to the project area. Apart from the consultation with the community members, consultations / in depth interviews will also be carried out with the NGOs working in the area and representative of local self-government. The screening will look into the details of tribal households, assessing the number of such households along the zone of influence of the proposed sub project. If the result shows that there are tribal households, the issues related to the community will be included in the social impact assessment (SIA) survey.

4.9.2 Social Assessment

The SPPD would be responsible for conducting SA and the development of an action plan with the help of indigenous community and organizations working for them. The SA will gather relevant information on demographic, social, cultural; economic and networking aspects of each household and needs of the community as a whole. The information on individual household

will be collected through household survey whereas, community based needs will be assessed through group discussions with the community as a whole as well as in discussion with the community leaders and government and non-governmental officials working in the area on tribal issues. The discussion will focus on both positive and negative impacts of the sub project. The suggestion and feedback of the community on the design and planning of the sub project will also be documented.

4.9.3 Entitlement:

Based on the Operational Policy 4.10 of the World Bank and as one of its significant R&R requirements; special provisions for the Scheduled Tribes (ST) has been made in the project R&R Policy (apart from the general compensation and assistance to be received as Project Affected Persons (PAPs)/Project Affected Households (PAHs)) of sub-project for loss of assets. Apart from compensation at replacement value and R&R assistance for any adverse impact, each IP family will be entitled for additional benefits as one time grant.

4.9.4 Monitoring & Evaluation

The SPPD will set up an internal monitoring system comprising its own staff, tribal people to monitor the IPDP implementation. Monitoring indicators will be established. In addition, an external independent monitoring agency will be employed by SPPD. Some of the relevant indicators for monitoring of both physical and financial progress are listed below as a guideline:

Sl. No.	Monitoring Indicators	Methods to asses and measure
A.	Indicators for Physical Progress	
1	No. of ST beneficiaries villages / settlement	Through concurrent monitoring and independent evaluation.
2	No of ST households benefited	
3	Total No. of ST beneficiaries provided project employment	
4	No. of ST women provided project employment	
5	Total No. of ST beneficiaries provided training for employment	
6	No. of ST women provided training for employment	
7	No. of community facilities constructed in villages with ST population	
B.	Indicators for Financial Progress	
1	Total amount spent	Review of SPPD documents and concurrent monitoring
2	Amount spent on construction of community assets	Review of SPPD documents and concurrent monitoring
3	Amount spent on training and capacity building activities for employment generation	Review of SPPD documents and concurrent monitoring

4.9.5 Suggested Format for IPDP

The suggested format for the IPDP is as follows

- i. Description of sub projects and implications for the indigenous community
- ii. Gender disaggregated data on number of tribal households by impact category
- iii. Social, cultural and economic profile of affected households
- iv. Land tenure information
- v. Documentation of consultations with the community to ascertain their views about the project design and mitigation measures
- vi. Findings of need assessment of the community
- vii. Community development plan based on the results of need assessment
- viii. Modalities to ensure regular and meaningful consultation with the community
- ix. Institutional arrangement and linkage with other national or state level programmes
- x. Institutional mechanism for monitoring and evaluation of IPDP implementation and grievance redress
- xi. Implementation Schedule and cost estimate for implementation

4.9.6 Key Elements of IPDP and Participatory Approach

The key elements in an IPDP include:

- i. All development plans for indigenous people should be based on full consideration of the options and approaches that best meet the interests of the communities.
- ii. Scope and impact be assessed and appropriate mitigation measures are identified
- iii. Project should take into account the social and cultural context of affected peoples, and their skills and knowledge relating to local resource management
- iv. During project preparation, formation and strengthening of indigenous peoples organization; communication to facilitate their participation in project identification, planning, execution and evaluation should be promoted.
- v. In case SPPD is not capable of preparing and implementing IPDP, experienced community organizations / NGOs can be involved as intermediaries.

4.9.7 Participatory Approach for Preparation of IPDP

The main thrust of IPDP is to address the developmental issues of the project taking into consideration the marginality status of tribal community. The IPDP will offer developmental options addressing community based needs of indigenous people while respecting their socio-cultural distinctiveness. The IPDP aims at strengthening the existing capacity of the affected tribal community. The strategy of IPDP therefore would be to promote participation of the tribal people, initiating and identifying people's need, priorities and preferences through participatory approaches. Therefore, the action plan for a particular village will be prepared by the community themselves. These plans would be prepared on yearly basis.

Participatory Rural Appraisal (PRA) initiates the process of people's participation, facilitating decision-making through mutual discussion and direct consultation. Participatory approach is intended to promote participation of all stakeholders creating development opportunities for the affected community. It is therefore, mandatory that appropriate PRA tools along with Focus

Group Discussion (FGD) is employed to initiate participation in IPDP for collection of qualitative data. The areas of enquiry would mainly include:

- i. Identification of tribal groups
- ii. Access to natural resources, likely impact on land ownership and land distribution, share cropping and lease holder
- iii. Participation in the livelihood security component of the project
- iv. Employment and income generating opportunities in agriculture, trade and business and services
- v. Poverty
- vi. Women and Gender relation
- vii. Felt needs and community organization

With a view to assess the life patterns of the affected indigenous population and to prepare IPDP in consistent with community and region specific background, pertinent baseline information shall be collected, compiled and analyzed. The baseline information on socio-economic characteristics including land tenure, land holding categories, occupational pattern, usual activity status, income – expenditure pattern, access to natural resources, health status, literacy level, age structure, gender, marital status, etc shall be collected in order to facilitate the planning process. The baseline data shall be collected through pre-tested structured schedules.

The most important component of IPDP is to assess the type and magnitude of impacts, both positive and negative on the tribal communities. The assessment of impacts on tribal population in the projects shall focus on the probable consequences of the project according to specific criteria / indicators.

The indicators may include:

- i. Access to natural resources (such as forest, grazing land, weekly markets, etc.)
- ii. Job opportunities through wage labour within or outside agriculture
- iii. Employment and income generating opportunities in agriculture, trades, services and business
- iv. Tribal community rights, institutions, values and way of life
- v. Social infrastructure and public services such as sources of water, health facilities, schools, etc
- vi. Reduction in political power, marginalisation and social disarticulation
- vii. Changes in farming methods, cropping pattern, crop yield, income, expenditure pattern, etc.

One major activity during the course of the survey would be to identify, various community specific developmental needs linked to their socio-economic and cultural life. The needs shall be identified for infrastructure development and community service facilities such as weekly markets, drinking water facility, sanitation, health facility, schools, community halls, post office, watershed structure, drainage, etc.

4.9.8 Implementation Issues and Strategy

It is envisaged that proper implementation of IPDP is possible only through community participation. The participatory approach will ensure:

- i. Promotion of community concern and involvement
- ii. Proper organization and management of resources
- iii. Setting up of criteria and fixing criteria and procedures for project execution are done at the grass root level
- iv. Identification, selection and strengthening of implementing agency at the grass roots level

Steps will be taken to ensure that (i) tribal community participates in the project, (ii) is fully aware of their rights and responsibilities; and (iii) are able to voice their needs during IPDP preparation. The community would be encouraged to prepare their own plan that caters to the needs of the community.

Appropriate people's organization and forum need to be built up and strengthened to ensure effective peoples representation and empowerment in the process of selection of specific community development activities and their execution. The conventional top down approach to project implementation through prevailing bureaucratic framework, need to be reoriented for the framework of participative administrative structure to respond to bottom up initiatives based on participatory process for informed community participation and empowerment.

IPDP as a means of sustainable development is based on the strategy of using culturally appropriate, socially acceptable and economically viable opportunities for livelihood of the tribal community including farmers, agriculture and non-agriculture labour, women and wage earners.

The strategy includes:

- i. Participation of tribal community in plan preparation, formulation and implementation by strengthening their existing tribal social, political and community organizations through required legislative measures, positive administrative responses and people's mobilization.
- ii. Strengthening women's traditional role in subsistence economy through organization, capacity building for leadership and skills improvement, access to non timber forest produce (NTFP), while bringing about greater sharing of household responsibilities between men and women.
- iii. Keeping in view the strong bondage of the tribal community with land and forest, subsistence practices, traditional culture and ways of life, the strategy may create space for innovative policy measures through appropriate legislation / executive actions. Such innovative policy responses may cover any aspect of their needs from food security, income generating activities, right over forest produce, community health measures or any such issue as generated by the community in course of their participation in the plan process.
- iv. Involvement of non-governmental organization (NGO) as an interface between the government and the tribal community to "bind" and strengthen their organizations,

develop a mechanism for redress of grievances and facilitate their being a “stakeholder” in the institutional arrangements for IPDP.

- v. To ensure the right institutional mechanism for this strategy, IPDP will be integrated with the existing structures of ITDP/DRDA wherever necessary.

Non-governmental organizations (NGO) are “secondary stakeholders” who can facilitate the participation of “primary stakeholders”-the tribal community. The NGOs must have a clear understanding of the socio-economic, cultural and environmental context of the project.

The social and community organizations of tribal population will be identified to strengthen and involve them in participatory process of IPDP. The IPDP will develop a linkage with the structure and the process of tribal development administration so that the tribal communities can enjoy more benefits. The NGOs will also provide the important interface between tribal administration and the community.

Grievance Redress Mechanism: Apart from project GRM, a specific grievance mechanism will be established for indigenous people. A district level grievance redressal cell will be constituted to address the grievances of the tribal community.

Members of GRC: The cell will be constituted by the SPPD in the concerned project districts. The GRC will be represented by the representatives of tribal PAPs and also non-tribal, the village head, NGOs contracted for the implementation of RAP and any other opinion leader from the concerned village. It will be chaired by a retired officer, who served as principal/judges/ Deputy commissioner/Additional DC, etc.

Functions of the Cell: The district grievance cell will conduct a meeting in the first week of every month to hear the grievances from the PAPs. All the complaints will be forwarded to the concerned department/officials within 15 days from the date of receiving the complaints. The issues resolved/addressed by concerned officials within 45 days from the receipt of the complaints. All the grievances received shall be discussed by the Chairman of the cell with executive engineer of the concerned PIU for the necessary action.

The committee shall submit a monthly report to the SPPD for the reference regarding the issues received and the cases disposed and forwarded to SPPD. In case aggrieved person is not satisfied by the verdict given by GRC, he or she is entitled for approaching the judiciary.

4.9.9 Gender Issues among Tribes

The tribal women play an important role in the community and family. Women normally constitute half of the total population in any project area and for survival tied themselves to land and forest. These women work as agricultural labourers. Even in agricultural household, women share with men the burden of agricultural operations like transplanting, weeding, harvesting, threshing, winnowing, etc. The concentration of women in agricultural and allied activities is due to the decline of rural industries leading to large-scale reduction of labour force within non-agricultural sector.

In IPDP, therefore, efforts will be made to (i) create an institutional framework to make gender sensitive decisions. SPPD in consultation with SRCA and Women and Child Welfare Department shall constitute Women Interest Groups (WIGs) within a village and Gender Advisor Committee at district and state level, (ii) women members would be trained for upgradation of skills to initiate viable irrigation related income generation activities for their economic empowerment. In addition women members will be trained in fisheries, animal husbandry, value addition to NTFP, development of kitchen garden, home orchards; production of mushroom, rice-cum-fish culture, or any other locally required trades that can help them to generate additional income, (iii) through training, women members will be provided information to make them an active participant in various developmental activities. The activities include (a) provide information on developing a WIG sub plan, (b) linking with other women's development programmes of line department, and (iv) NGO will focus on women's need for social development

5 CONSULTATION AND PUBLIC DISCLOSURE

The Consultation process envisages involvement of all the stakeholders' at each stage of project planning and implementation. The SPPD will be responsible for ensuring participation of the community at sub-project level. Involvement of the community is not limited to interactions with the community but also disclosing relevant information pertaining to the project tasks.

5.1 Sub-project Consultations

The consultants team conducted FGD's / stakeholder consultations in selected villages in the sub-project locations involving the team social experts, community mobilizer and other key experts to gauge the stakeholder perception about the sub-project. A total of 15 local level consultations were carried out in the selected 10 villages. The stakeholders included land owners losing land and landless labourers. Team ensured participation of women members in each consultation.

The key issues and concerns identified during the consultations included:

- i. Are these project going to provide any benefits for the local people especially in terms of employment
- ii. Whether local people will get employment
- iii. Whether solar panels will have any impact on the health of the people and the crops being grown in the area.
- iv. What will be the rate for land payable to the land owners (in case of Rewa)
- v. What is the mechanism to ensure timely payment of lease rent for land being pooled for solar project (in case of Pavagada).
- vi. What will be the fate of agricultural labour that do not own land and are dependent on land owners for labour work on agricultural land owned by big farmers?
- vii. How would the SPPD ensure that the noise / dust / labour camps setup during the construction phase of the project does not impact the local village community?
- viii. Will the construction activity have any adverse impacts on our existing surface water resources?

The details of the consultations are provided below:

Location for Consultation	Issues Covered / Raised by participants	How it would be addressed
Proposed Solar Park Site - Pavagada		
Selected five villages: Thirumani, Balasamudra, Vollur, Kyathaganacherlu, Rayacharlu	Opportunity for employment generation for the village land owners and the agricultural labour - Semi-skilled / unskilled	The local community members will be preferred for employment during construction. Those losing livelihood will be provided opportunities for alternative livelihood.
Number of	The annual lease rate is low in	Rates will be finalized in

Location for Consultation	Issues Covered / Raised by participants	How it would be addressed
stakeholders consulted : 70 stakeholders	comparison to adjoining areas for similar projects	consultation with the local community and district administration. Additional public disclosure about the criteria for calculation etc to be made known to stakeholders.
	What other benefits for the village / land owners	Developers will carry out developmental activities in the villages as part of CSR. The activities will be identified in consultation with the community.
	Stakeholder expects better power supply situation in villages after the implementation of solar power plant	The government may consider to include a small percentage of power produced by the developer to be allocated for the local population or alternatively, the conditions could be included in the agreements for the developer to install roof-top solar power panels for the local villagers as part of the CSR budget of the company
	What would be the payment schedules and how will the timely payments be ensured	The lease will be paid annually with an increment of 5% every two years. Project to make community aware about the mechanisms to be put in place for ensuring timely payment of lease rentals payable to them.
	Impact of dust on standing crops during construction phase	Contactor will ensure watering of construction site / tracks on regular basis.
Proposed Solar Park Site - Rewa		
Selected five villages: Badwar, Barseta Desh, Barseta Pahar, RamNagar Pahar and Etar Pahar	What will be the rate for acquiring land	The land owners will be paid double the circle rate as per the provisions of the state policy.
Number of stakeholders consulted : 85 stakeholders	What impact the project will have on the surrounding areas due to radiation.	The solar panels do not have any adverse impacts on the health due to radiations.

Location for Consultation	Issues Covered / Raised by participants	How it would be addressed
		The Project will undertake awareness campaigns about the solar panels and how it works on regular basis.
	How will the access to the private land parcels ensured which are not included in the solar park	The easement rights shall be ensured while preparing the detailed layout plans for the solar park.
	Impact on surface water sources	Ensure that the existing drainage and surface water bodies are not altered during construction stage. Water from such sources should only be withdrawn after getting NOC from local panchayat.
	What will happen to our houses falling within the proposed site?	Project will prepare a resettlement action plan which will provide for mitigation measures for all adverse impacts including relocation. The impacted structures will be compensated at replacement value.
	Access to forest area for collection of NTFP	Project to ensure that community has access to forested areas.

5.2 Mechanism for Consultation

The Consultation Framework envisages involvement of all the stakeholders' at each stage of project planning and implementation. Involvement of the community is not limited to interactions with the community but also disclosing relevant information pertaining to the project tasks. Community participation shall be ensured at the following stages:

5.2.1 Sub Project identification stage

To sensitize the community about the sub-project and their role

5.2.2 Planning Stage

For disseminating information pertaining to the sub-project, work schedule and the procedures involved; finalization of project components with identification of impacts, entitled persons, mitigation measures; and Grievance Redressal mechanisms to be adopted

Dissemination of project information to the community and relevant stakeholders is to be carried out by SPPD at this stage of the project initiative. The community at large shall be made aware of the project alternatives and necessary feedback is to be obtained. Community and

other stakeholders should be involved in the decision making to the extent possible. Information generated at this stage should be documented for addressal of queries arising out of the Right to Information Act, 2005.

Consultations with Project Affected Persons and their profiling are mandatory as per the requirements of SIA and preparation of RAP. This needs to be done as socio-economic and census surveys as part of the ESA study. Consultations with respect to cultural aspects are to be carried out as part of the Social Impact Assessments for all alternatives and the selected alternative sub-project option.

5.2.3 Implementation Stage

Consultations as part of the implementation stage would be direct interactions of the implementation agency with the Project Affected Persons. These would comprise of consultations towards relocation of the PAPs, relocation of cultural properties, and towards addressing the impacts on common property resources (CPRs) such as places of religious importance, community buildings, trees etc.

With the implementation of the R&R provisions in progress, consultations and information dissemination is to be undertaken to let the affected persons informed of the progress. Implementation stage also involves redressal of grievances in case of R&R aspects as well as relocation of common property resources through the grievance redressal mechanisms. These would usually be one to one meeting of PAP or community representatives with the grievance redressal committee established for the project.

5.3 Stakeholder Mapping

Through the formal and informal consultation, following stakeholder mapping has been done, identifying their interests concerned with the project activities.

Stakeholder Category	Interests	Potential/Probable impacts
Primary stakeholders		
Project affected people	Access to the facility, Project entitlement, Time-bound delivery of benefits, enhanced quality of life	(+/-)
Beneficiaries	Access to the facility, Project entitlement, Time-bound delivery of benefits, enhanced quality of life	(+/-)
Secondary stakeholders		
MNRE, SPPD, Developers, Village Panchayat	Project implementation, Contracting; Project management, Monitoring and evaluation	(+/-)
NGOs, CSOs, Research institutes	Development, Community participation, and Community welfare	(+/-)

This is a tentative mapping is likely to change during the project implementation. Each of these stakeholders will be part of the consultation process and their views will be incorporated in to

the project design. The key stakeholders can be grouped into two categories viz., primary and secondary. Their respective roles are presented below:

5.3.1 Primary Stakeholders

5.3.1.1 Project Affected Persons (PAPs) have the following roles:

- i. Participate in public meetings and identify alternatives to avoid or minimise displacement
- ii. Assist SPPD in developing and choosing alternative options for relocation and income generation.
- iii. Participate in census survey.
- iv. Provide inputs to entitlement provisions, thus assisting in preparation of the resettlement action plan
- v. Participate in grievance redress as members of grievance redress cells (GRC)
- vi. Decide on relocation and management of common properties
- vii. Labour and other inputs in the project
- viii. Members of implementation committee

5.3.1.2 Beneficiaries and Host Population has the following roles:

- i. Assist Developer in planning CSR activities in the villages.
- ii. Provide inputs to site selection
- iii. Identify possible conflict areas with PAPs
- iv. Assist in identification and design inputs for IG (income generation) schemes
- v. Manage common property
- vi. Participate in local committees.

5.3.2 Secondary Stakeholders

5.3.2.1 SPPD, Developer, Village Panchayat has the following roles:

- i. Establish separate cell for environment and social development
- ii. Notification at various stages for land acquisition and joint measurement of land to be acquired along with the revenue department
- iii. Design and approval of resettlement policy
- iv. Coordinate with line departments such as telephone, state electricity board, and forest department for shifting of utilities and cutting of trees.
- v. Participate with NGOs in verification survey of PAPs and categorisation of PAPs
- vi. Participate in consultations with PAPs and beneficiaries
- vii. Coordinate with local community in identifying land for relocation of common property resources
- viii. Coordinate with civil construction contractor to relocate common property resources
- ix. Coordinate with revenue department for facilitating disbursement of compensation and resettlement and rehabilitation assistances
- x. Monitoring of physical and financial progress

- xi. Participate in training programmes for income restoration.
- xii. Consult with panchayat and block office to facilitate inclusion of PAPs' name for poverty alleviation schemes of government of India.

5.3.2.2 NGOs have following roles:

- i. Develop rapport with PAPs and between PAPs and EAs.
- ii. Verification of PAPs
- iii. Consultations with the community.
- iv. Assess the level of skills and efficiency in pursuing economic activities, identify needs for training and organise programmes either to improve the efficiency and/or to impart new skills
- v. Assist PAP in receiving rehabilitation entitlements due to them
- vi. Motivate and guide PAP for proper utilisation of benefits under R&R policy provisions
- vii. Assist PAPs in obtaining benefits from the appropriate development programmes.
- viii. Complete the consultation at the community level and provide support by describing the entitlements to the entitled persons (EPs) and assisting them in their choices
- ix. Accompany and represent the EPs at the Grievance Redress Committee meeting.
- x. Assist EPs to take advantage of the existing government housing schemes and employment and training schemes that are selected for use during the project, and
- xi. Promote location specific Community Based Organisations (CBOs) of PAPs to handle resettlement planning, implementation and monitoring.
- xii. Create awareness among PAPs of health and hygiene.

5.4 Information Disclosure

The mechanism of information dissemination should be simple and be accessible to all. Two of the important means that have been followed until now include briefing material and organization of community consultation sessions. The briefing material (all to be prepared in local language) can be in the form of (a) brochures (including project information, land requirements and details of entitlements including compensation and assistance to be given to the PAPs) that can be kept in the offices of local self-government (municipal office in case of urban area and gram panchayat office in case of rural area) and SPPD; (b) posters to be displayed at prominent locations and (c) leaflets that can be distributed in the impacted zone of the sub project. Consultation meetings should also be organized at regular intervals by the SPPD to acquaint the PAPs of the following:

- i. Timeline and progress of the project;
- ii. Information on compensation and entitlements;
- iii. Information on land acquisition and market valuations of property;
- iv. Time line for acquisition.

Also, opinion and consensus of the community needs to be sought for common and cultural property relocation. Information disclosure procedures are mandated to provide citizen centric information as well as all documentation necessary for addressing any queries under Right to Information Act that came into effect from October 2005. A computer based information

management systems shall be employed to disseminate information pertaining to the project. Disclosure of information will enhance governance and accountability specifically with respect to strengthening of monitoring indicators to help the World Bank monitor compliance with the agreements and assess impact on outcomes.

This Information Disclosure Policy is intended to ensure that information concerning the Solar project activities will be made available to the public in the absence of a compelling reason for confidentiality. Information shall be provided in a timely and regular manner to all stakeholders, affected parties, and the general public. Access by the public to information and documentation held or generated by SPPD will facilitate the transparency, accountability, and legitimacy as well as operations overseen by it. As a part of its disclosure policy, all documents shall be made available to the public in accordance with relevant provisions of the RTI Act, except when otherwise warranted by legal requirements. A designated Information Officer shall be responsible for ensuring timely and complete dissemination in accordance with this policy.

5.4.1 Information to be disclosed

Table below specifies the type of additional information and frequency of dissemination for projects which are financed either from domestic or donors' funds.

Topic	Documents to be Disclosed	Frequency	Where
Resettlement, Rehabilitation and Land Acquisition	Resettlement Action Plan (RAP).	Once in the entire project cycle. But to remain on the website and other disclosure locations throughout the project period.	World Bank's Infoshop On the website of SPPD, The client would make the RAP available at a place accessible to displaced persons and local NGOs, in a form, manner, and language that are understandable to the PAPs in the following offices: DM's Office State and District Libraries Local municipal and <i>gram panchayat</i> office Office of the contractor
	Resettlement & Rehabilitation Policy translated in local language	Once in the entire project cycle.	Distributed among Project Affected Persons (PAP)
	Information regarding impacts and their entitlements in local language	Once at the start of the project and as and when demanded by the PAP.	Through one-to-one contact with PAPs. Community consultation List of PAPs with impacts and entitlements to be pasted in the SPPD office and website of SPPD,
	R&R and LA monthly progress report.	10th day of every month	Website of SPPD. Hard copy in the office of contractor in local language
	RAP Impact Assessment Report	At midterm and end of the RAP implementation	SPPD website in local language.
	Land Acquisition	As required under the	SPPD, website.

Topic	Documents to be Disclosed	Frequency	Where
	notifications	RFCTLARR Act 2013	Hard copy in the office of contractor in local language
	Grievance redressal process.	Continuous process throughout the project cycle.	World Bank's Info shop. On the web sites of SPPD Hard copies in local language in the following offices: DM's Office Local municipal and <i>gram panchayat</i> office Office of the contractor PAPs to be informed on one to one contact
Public Consultation	Minutes of Formal Public Consultation Meetings	Within two weeks of meeting	On the web sites of SPPD Hard copies in local language in the following offices: DM's Office Local municipal and <i>gram panchayat</i> office Office of the contractor
Environmental Management Plan	Construction Schedule including movement of heavy machinery	Before the start of the project construction phase	On the web sites of SPPD Hard copies in local language in the following offices: DM's Office Local municipal and <i>gram panchayat</i> office Office of the contractor
	Hazardous Waste Disposal		On the web sites of SPPD Office of the contractor

In addition to the information specified in the table, the following information shall also be displayed / disseminated, wherever applicable.

- i. Project specific information need to be made available at each contract site through public information kiosk
- ii. Project Information brochures shall be made available at all the construction sites as well as the office of implementation agency and the office of Engineer in charge.
- iii. Reports and publications, as deemed fit, shall be expressly prepared for public dissemination e.g., English versions of the SIA and RAP and Executive Summary of SIA and RAP in local language.
- iv. Wherever civil work will be carried out a board will be put up for public information which will disclose all desired information to the public, for greater social accountability.
- v. All information will be translated into local language and will be disclosed to the public through the Panchayat, District Magistrate's office, concerned project offices, websites of SPPD.

6 INSTITUTIONAL STRUCTURE / IMPLEMENTATION

For successful implementation of Environmental and Social safeguards, Institutional setup plays a vital role. The Solar Power Park Developer (SPPD) would be set-up as a JV Company between the state and Centre government agencies to streamline decision-making and provide more autonomy for project execution and delivery.

6.1 Sub-project Execution Structure

MNRE has notified the administrative approval on 12th December, 2014 for implementation of a Scheme for Development of Solar Parks and Ultra Mega Solar Power Projects in the country commencing from 2014-15 and onwards (i.e. from the year 2014 – 15 to 2018 – 19). The implementation arrangement for the sub-projects is depicted in the figure 2 below:

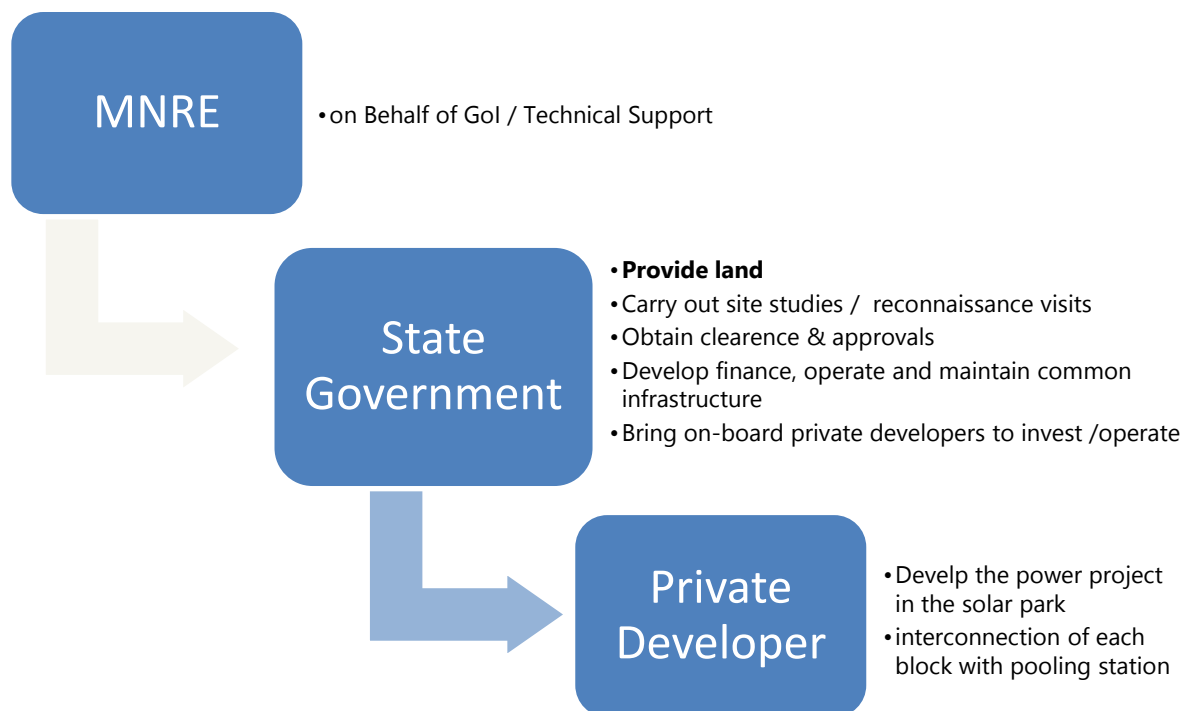


Figure 2: Implementation Arrangement for Solar Parks

6.1.1 Role of State Government

Land for setting up of the Solar Park will be identified by the State Government unless the implementing agency has its own land. In order to provide for such a large tract of contiguous land, the State Government may prioritize the use of government waste/ non-agricultural land in order to speed up the acquisition process. The use of private land shall be minimized. The price

of the land is to be kept as low as possible in order to attract the developers and, therefore, the site should be selected in such a manner so that inexpensive land can be made available. If land cannot be made available in one location, then land in few locations in close vicinity may be taken. Possibility of using cold and hot deserts, sides of highways can also be actively explored. The park must have at least 5 acres per MW towards installation of solar projects and will give opportunity for use of all technologies in a technologically agnostic fashion.

All infrastructural requirements outside the park such as connecting road, provision of water supply, electricity, etc. to make the park functional, will be the sole responsibility of the concerned State Government.

6.1.2 Role of Solar Power Park Developer (SPPD) / JV Company

The Implementing Agency of Solar Park as defined in the Scheme is re-designated as the Solar Power Park Developer (SPPD). The SPPD will be nominated by the State Government for development of solar parks as per the procedure given in the Scheme for the solar park. The SPPD is tasked with acquiring the land for the Park, maintain it, leveling it wherever considered desirable and allocating the plots for individual projects.

The SPPD will be responsible for creating the internal transmission network on behalf of the solar project developers. This network will connect with the Intra State Transmission System (ISTS) or State Transmission System. The transmission network within the solar park will be captive / dedicated transmission system of the solar project developers of the park. Following are the essential responsibilities of SPPD:

- I. Acquisition of land or Land Assembly/pooling
- II. Getting land related clearances
- III. Developing approach road to each plot
- IV. Developing internal transmission system and maintaining it.
- V. Making arrangement to connect to the grid i.e. ISTS or State Transmission Network.
- VI. Providing basic drainage.
- VII. Providing water supply (minimum essential quantity)

Following are the optional responsibilities of the SPPD:

- I. Leveling and development of land (to be avoided as far as possible).
- II. Construction of offices, housing and common building infrastructures.
- III. Forecasting, Scheduling
- IV. O&M or related functions.
- V. Solar radiation data
- VI. Metalled road to all plots and within plots to each array
- VII. Maintenance of internal power supply and water supply.
- VIII. Security
- IX. Operations & maintenance and waste disposal
- X. Technical support services (consultancy etc.).

The above mentioned (in particular the underlined activities) roles and responsibilities of the SPPD are likely to have some adverse impacts on the environment which need to be mitigated and ensured that the appropriate mitigation measures are included as part of the civil works contracts / EMP.

6.1.3 Roles and Responsibilities of Social & Environmental Officer - SPPD

Most of the solar parks are located in remote areas, and development of solar parks may relocate the people or affect their livelihood. For upliftment of people and community development, there is a need for Rehabilitation and Resettlement (R&R) of Project Affected People (PAP) with the objective that standards of living of the PAP improves or at least regain their previous standards of living.

The proposed organization structure for RAP/EMP implementation is presented in figure 3. The CEO of the SPPD will have overall responsibility for implementation of sub-projects and identification of developers. An "environmental and social development expert" shall be recruited as part of SPPD and will report to the CEO of SPPD. He is overall responsible for EMP and RAP Implementation, coordinating and liaising with government organization as well as the World Bank with respect to different social and environmental issues. He will also be responsible for progress monitoring of Environmental and social safeguards during project construction and execution stage and submission of monthly report (during construction stage) and quarterly report (during operations stage) on EMP compliance to the funding Agency.

The roles and responsibilities of the Social and Environmental Expert shall be:

- I. Prepare TOR for any studies required and qualitative dimensions to the implementation of RAP/ ESMP;
- II. Participate in and facilitate consultations with stakeholders
- III. Participate in project meetings and report on the issues related to environmental management and social safeguards to provide for any mid-course corrections that may be required based on situation on the ground
- IV. Assist PAPs to resolve their grievances
- V. Coordinate on the training and capacity building initiatives
- VI. Review contract documents to ensure that EMP provisions related to works are included in the contract documents
- VII. Act as a resource person in trainings based on experience on implementing this project and previous relevant work
- VIII. Oversee and report to CEO on implementation of EMP provisions included in the works contract for each sub-project in the state
- IX. Liaison with state administration for land acquisition/procurement and implementation of RAP
- X. Report progress, highlighting social issues not addressed, to provide for mid-course correction.
- XI. Assist PAFs in approaching the grievance redressal mechanism
- XII. Carry out other responsibilities as required from time to time

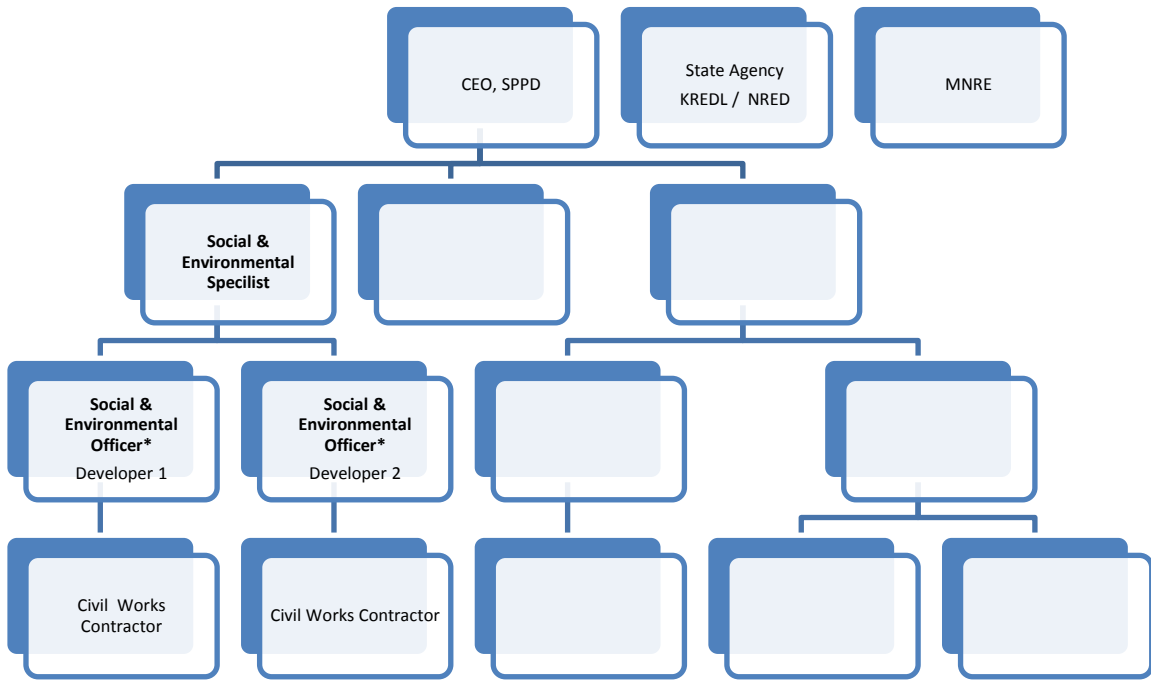


Figure 3: Proposed Organization structure for EMP/RAP Implementation²

6.2 Utilization of MNRE Grant

The expenditure on the development of a solar park will mainly constitute (a) expenditure on account of development of land and its infrastructure facilities and (b) Transmission network and Pooling Sub-station. The MNRE grant may be utilized in such a manner that higher proportion of funds are used for internal and external transmission as that is the most essential function. The SPPD, responsible for development of the solar park, shall endeavor to optimize the total expenditure to be made for the development of the solar park, such that the power generated by the prospective solar project develops is low and competitive.

6.3 Grievance Redressal Mechanism

An integrated system will be established with Grievance Redressal Cell (GRCs), with necessary officers, officials and systems, at the state as well as SPPD. Grievances if any, may be submitted through various mediums, including in person, in written form to a noted address, through a toll free phone line or through direct calls to concerned officials, and online. The Social and Environmental Expert in the SPPD team shall be responsible for coordination of grievance/complaints received. The person in-charge based on nature of complaint, will forward the same to the concerned official. A ticket or a unique number will be generated for all such call and messages. The complainant will follow up based on that unique number. All calls and messages will be responded within two weeks. If response is not received within 15 days, the complaint will be escalated to next level. The staffing of GRC will include Environmental and Social Nodal officer of SPPD; and two representatives from community / beneficiary / affected

² The developer should designate one person from core team as “Environmental and Social Officer” to discharge sub-project responsibilities on ESMP compliance.

persons. The head of the cell will be a person of repute but not continuing in the government service.

A project affected person however is free to approach judiciary system of the country if he or she is not satisfied with the verdict given by GRC.

6.4 Monitoring and Reporting

The SPPD through the respective developers will monitor all the sub projects to ensure conformity to the requirements of the ESMF. The monitoring will cover all stages of planning and implementation. The monitoring will be carried out through the environmental and social safeguard compliance reports that will form a part of Monthly Progress Reports (MPR) for all sub projects and regular visits by the environmental and social specialists of the SPPD.

The SPPD will review these evaluation reports and identify technical, managerial, policy or regulatory issues with regards to the compliance of the RAP reports. The identified technical issues will be duly incorporated. Policy and regulatory issues will be debated internally by SPPD and the need for appropriate interventions will be determined. These interventions could include appropriate revision of ESMF document / R&R Policy in consultation with the Bank or suitable analytical studies to influence policy or programs of the state, if found necessary / warranted.

An external evaluation of the RAP implementation prepared for sub projects will also be undertaken twice during the implementation of the project – midterm and at the end of the implementation as per the terms of reference. During implementation, meetings will be organized by SPPD inviting all PIUs for providing information on the progress of the project work.

Project monitoring will be the responsibility of the SPPD who will submit Monthly Progress Reports. The reports will compare the progress of the project to targets set up at the commencement of the project

Tables 2 below present the Mitigation, Monitoring, Responsibility and Timeline for Environmental and Social Impacts

Table 2: Environmental and Social Monitoring Indicators

S. No	Impact / Issues	Monitoring Measures	Responsible Agency
Environmental Indicators			
1	Disposal of Batteries	Number of batteries disposed / new installed	Developer
2	Handling / disposal of defected PV panels	Number of panels defective / number of panels replaced	Developer
3	Extent of wash water reuse / recycling	Water used on a monthly basis / wash water recycled on a monthly basis	Developer
4	Use of PPE on site	PPE available on site /	Developer
5	Regulatory Compliance	Quarterly and annual compliance reports submitted to the regulatory authority / SPPD	Developer

S. No	Impact / Issues	Monitoring Measures	Responsible Agency
Social Indicators			
1	Land acquisition	Regular internal monitoring by the SPPD and periodic evaluation	SPPD
2	Acquisition of house/ structure	Regular internal monitoring by the SPPD and periodic evaluation	SPPD
3	Loss of livelihood or source of livelihood	Regular internal monitoring by SPPD; midterm and end term evaluation	SPPD to hire evaluation consultants
4	Loss of access to private and / or common property	Regular internal monitoring by SPPD ; midterm and end term evaluation	SPPD to hire evaluation consultants
5	Displacement of Non-Titleholders	Regular internal monitoring by the SPPD a midterm and end term evaluation	SPPD to hire evaluation consultants
6	IPDP (If applicable)	Regular internal monitoring by the social development professional of SPPD. midterm and end term evaluation	SPPD to hire evaluation consultants
7	Gender Action Plan	Regular internal monitoring by the social development professional of SPPD. midterm and end term evaluation	SPPD to hire evaluation consultants

The list of above mentioned impact performance indicators will be used to monitor project objectives as depicted in table below along with the milestones. The socio-economic survey conducted will provide the benchmarks for comparison.

Table 3: Project Objectives as per milestone

Milestones	Objectives	Process	Responsibility	Decision/Target/Deliverable
1. Sub-Project Screening	To approve categorization of proposed sub-projects	a. Discussions with implementing agencies to <ul style="list-style-type: none"> Assess eligibility of project based on project's priorities Identify scope of project report b. Consultants to submit report along with proposed impact categorization	SPPD	<ul style="list-style-type: none"> Decision to proceed or not Identification of impact category

Milestones	Objectives	Process	Responsibility	Decision/Target/Deliverable
2. Sub-Project Appraisal	To ensure satisfactory compliance with ESMF	Detailed appraisal (including EIA & EMP, RAP, GAP and IPDP where relevant), including site visits/ investigations if necessary assess suitability of site, adequacy of safeguard measures, risk analysis and regulatory clearances). DPR to be submitted for approval	SPPD	Review report and decide to - accept - accept with modifications - reject and instruct to resubmit
3. Approval	Approvals from SPPD	a. Project Implementation Agency to recommend to SPPD b. SPPD to review and approve	SPPD	• Approval of RAP, GAP and IPDP if required
4. Implementation of EMP, RAP, GAP and IPDP Monitoring and Review	Ensure Implementation of agreed RAP, GAP and IPDP where applicable)	a. Prepare quarterly progress reports b. Schedule field visits as required c. Midterm and end term evaluation	SPPD	• Quarterly Progress Report

The table 4 below gives the assessment methodology and the expected outputs for the various stages of implementation process. **Table 4: Monitoring Project Implementation Process, Input and Output**

Progress	Assessment Methodology	Expected Output
Implementation Process		
Notices under land acquisition process	Structured Schedule, informal and formal discussion	Timely notices to the affected families
Dissemination of information on project and social issues	Check the registers with the SPPD for queries	Adequate knowledge on project and its various components
Consultations conducted under the project with PAPs and others	Check the minutes of meetings registers with the PAPs. Verify copies on agreements made on issues raised and discussed.	Awareness and information on the project and participation in the project.
Consultations on R&R Policy and Distribution of R&R Policy of the project	Check the registers with the PAPs. Verify copies on agreements made on issues raised and discussed.	Awareness on R&R Benefits
Information on modes of valuation of assets, payment schedules and disbursement modes	Check the registers with the PAPs. Structured Schedule, informal and formal discussion	Awareness on methods of valuation, satisfaction with the payment schedules, disbursement modes
Needs assessment and training	Structured Schedule, informal	Awareness and satisfaction with

Progress	Assessment Methodology	Expected Output
programs for income generation	and formal discussion	the training programs for income restoration
Services of the NGO	Structured Schedule, informal and formal discussion	Proper knowledge, guidance and assistance in rehabilitation and resettlement
Functioning of the Grievance redressal mechanism	Check the records of the NGO and SPPD for the complaints registered	Appropriate and timely action on the grievances of the affected people
Consultations for the identification of the Community Development Works	Check the minutes of meetings registers with the PAPs. Verify copies on agreements made on issues raised and discussed.	Participation in decision making process and satisfaction with the identified areas of development
Financial progress		
Amount disbursed for acquisition of land, structure, trees, etc.	Structured Schedule, informal and formal discussion	PAPs purchased land equivalent or more than land loss of same quality
Amount disbursed R&R assistance.	Structured Schedule, informal and formal discussion	New house constructed, new land purchased, new productive assets purchased, created some income source to offset the loss of income
Amount disbursed for extension of development programmes, training and capacity building.	Structured Schedule, informal and formal discussion	Alternative income restoration programs initiated and lost income restored.
Fees paid to NGO for implementation of RAP and consultants for M&E activities	Structured Schedule, informal and formal discussion	Timely implementation
Amount disbursed for training of implementation staff of SPPD and PIU	Formal Discussion with concerned officials	Better implementation and coordination
Physical progress		
Total land Acquired	Structured Schedule	Progress of land acquisition
Number of PAFs relocated	Structured Schedule	Progress of resettlement
Number of PAFs R&R Assistance	Structured Schedule	Progress on Economic Rehabilitation
Social well being		

Progress	Assessment Methodology	Expected Output
Area and type of house and facility in case of relocation	Core Rapid Appraisal	Resettlement
Health conditions, morbidity and mortality rates, if relocated or pollution due to construction	Structured Schedule	Social well being
Communal harmony if relocated in another revenue village	Rapid Appraisal	Resettlement
Women time disposition and decision making power for women groups trained for alternative livelihood	Participatory Appraisal	Women Empowerment
Increase in literacy level due to project intervention; drinking water, schools, health facilities, and other community infrastructures if relocated and enhanced by the project	Structured Schedule	Social well and improved social status.
Increased annual Household income and expenditure due to project intervention	Structured Schedule	Improved income Economic Status

6.5 Budget

Each sub-project will have its own budget for implementation of EMP, RAP and IPDP. The budget heads for planning and pre-construction stage will include cost towards

- i. compensation for immovable properties;
- ii. R&R assistances;
- iii. cost towards relocation facilities if required;
- iv. training and capacity building;
- v. implementation arrangement;
- vi. monitoring and evaluation and
- vii. cost incurred by SPPD for day to day expenses on R&R issues.
- viii. Environmental & Social plan preparation

The budget heads for construction and O&M stage will include cost towards

- i. Wash Water treatment and reuse
- ii. Personal protective equipment
- iii. Health & Safety
- iv. Hazardous material transportation & disposal

6.6 Capacity Building Requirements / Activities

An assessment of the current institutional structure of the SPPD need to be reviewed to understand the capacity w.r.t to ensuring environmental and social management measures

compliance. Being a new entity, the SPPD staff would need additional training in the management of environmental and social issues of the program.

The SPPD in coordination with the educational / research institutions in the country who have substantial experience in the environmental and social management sector including a good understanding of the WB/IFC safeguard requirements, shall conduct classroom training sessions for all staff likely to be involved in sub-project planning & implementation. The Social and Environmental Officer can also be one of the resource persons for conducting such training programs.

The training will focus on the environmental and social issues. The contents will basically focus on the ESMF concept, regulatory requirements, Environment and Social priority issues, project cycle, outline of EA / SA and report formats in respect of the Environmental aspects. In respect of social aspects the course content will focus on the R & R policies and procedures, Land Acquisition process, identification of PAPs, Social entitlement frameworks, social assessment, RP techniques, and Risk Assessment and management skills.

The typical training modules for formal class room training could cover the following:

- i. **Module 1 - ESMF Profile** (Concept, regulatory requirements, ESA, reports and formats)
- ii. **Module 2 - Environmental Assessment Process** (Environmental Laws & Regulations, EIA process, Identification of Environmental Impacts, Impact Identification Methods, Identification Mitigation Measures, Formulation of Environmental Management Plan, Implementation and Monitoring, Institutional Mechanism)
- iii. **Module 3 - Social Assessment Process** (Description of NGRBA program R&R, tribal and gender frameworks and procedures and National requirements, LA process, Necessity for RAP and its preparation process)

The program should be structured in such a way that it clearly brings out the value addition and enhancement benefits of proper management of environmental and social issues.

7 ANNEXURE 1: BASELINE SCENARIO

7.1 Baseline Social and Environmental status – Pavagada

7.1.1 Location Characteristics

The proposed project site is located in the south eastern part of Karnataka State between north latitude 14°13' to 14 ° 20' and east longitude 77 ° 23' to 77 °30' and falls under five villages (i.e. Thirumani, Balasamudra, Vollur, Kyathaganacherlu and Rayacharlu) of Pavagada Taluk in Tumkur District.. The site is covered by Sol toposheet D43L7 & D43L8 Open Series.

The proposed site is located at a distance of approximately 30 km from the taluk headquarters, Pavagada and is connected by a Major District Road (MDR). The proposed site is at an approximate distance of 180 km from state capital Bengaluru. There is no rail connectivity currently available for Pavagada taluk. The nearest railway link is available at a distance of 100 km at Anantpur (Andhra Pradesh) and 140 km at Bellary Junction (Karnataka).

7.1.2 Soil Characteristics & Major Crops

The eastern part of the Tumkur District is characterized by red sandy soil and red loamy soil. These types of soils are generally severe to moderately erosion prone. Red sandy soils are suitable for the growth of Ragi, Jowar, Millets and Oil Seeds under rain fed conditions. The irrigated areas of red loamy soils are favourable for Paddy, Sugarcane and Vegetables.

Major crops grown in the proposed site and it's vicinity includes Ragi, Groundnut, Paddy, Maize, Cotton, Sunflower, Red Gram, Castor, and Horse Gram. Agricultural activities in the area are predominantly rain-fed. The main sources of irrigation are surface water tanks and bore-wells, which are being used only by very few well to do farmers.

7.1.3 Climatic Characteristics

The site elevation ranges from 760m to 900m above MSL. The climate of the area is semi-arid tropical with an average annual rainfall of 620 mm in an approximately 45 day's rainy period (during 2001 till 2010). As per the available statistics, Pavagada taluk received only 333mm rainfall during year 2011 thereby seriously affecting the agriculture activities.

Rains are uncertain and erratic, and cyclic semi dry conditions are very common. Winters are generally mild (12° C) with summers relatively hot with temperatures touching 38° C during April & May. The proposed site location is suitable for solar PV installations due to availability of good sunlight for maximum time of the year (annual GHI >1900 KWh/m²), gentle sloping land with minimal tree cover / shadow areas.

The winds are predominantly south westerly during summer monsoon and north easterly during winter monsoon.

7.1.4 Drainage & Slope Characteristics

The drainage pattern in the area can be classified as semi dendritic to dendritic. Overall the area is gently sloping towards north and is well drained. The surface water bodies act as a major source of water for both irrigation and non-portable household requirements. The area is drained by north flowing Pennar river tributary. The river is not perennial in nature.

The ESIA study shall ensure that the existing natural drainage pattern and surface water bodies in the study area are well conserved and any proposed developments do not have any adverse impacts on the surface water resources which are critical for the local residents.

7.1.5 Ground Water Characteristics

The decadal mean pre-monsoon & post monsoon data (2001 –2010) reveals a rise in water level by 0-2 m in most of the study area. The study area (falling under 4C3G6 watershed) has been identified as over exploited with regards to ground water utilization as per CGWB report (March 2009). Sustainability of ground water resource and its judicious use should be given prime importance while planning for Solar UMPP. In critical and over exploited areas artificial recharge and rainwater harvesting measures are recommended to augment the ground water resources. ESIA report should identify, the likely impacts, the likely conflicts in resource allocation among competing uses and mitigation measures to ensure sustainable use of the natural ground water resource.

Ground water in younger granites has more fluoride content than the gneisses. The fluoride content increases with depth in same aquifer. The shallow aquifers are having comparatively low concentration of fluoride. In order to reduce or control the problem, it is recommended to recharge ground water by way of artificial recharge structures like percolation tank, desilting of silted tanks, check dams, nalla bunds, farm ponds etc.

High concentration of nitrates, chloride and fluoride is observed in northern and central parts of Pavagada as per the CGWB findings. The ESIA study shall need to clearly identify the likely impacts and mitigation measures.

7.1.6 Flora & Fauna

The study area does not have any designated forest areas or critical forest areas. As the rainfall is low in Tumkur district, diversity of flora is not much and the species are restricted to Xerophytic type. The vegetation here is shrubby, thorny and stunted. Accacia (Jali) and Taddy trees are commonly found in alkaline soils. Ficus species such as Peepal and Banyan are found in forest as well as in the farms. Same is the case with Tammarind, Neem, Jack, Pongamia trees. The forest type in the 10 km area is dry deciduous forest types with scrub jungle.

Project Site does not pass through eco-sensitive area such as National Parks and Wild life Sanctuaries and there are no notified National Parks and Wild life Sanctuaries in the near vicinity (within 10 km of radius) of the proposed site.

As the area lies in the plains of the Deccan Plateau, bordering Andhra Pradesh, the wildlife found here is related to the drier areas like monkey, wild cat, wolf, squirrel, bats, fox, deer, rabbit, wild pig, wild lizard, variety of snakes, frogs and fishes, peacock, sparrow, crow, eagle, etc.

7.1.7 Socio-Economic Profile of the study area

The proposed project extent spread across the jurisdiction of five revenue villages. As per Census 2011, there were a total of 2417 households and the population of 10,294 with an average household size of 4.26. The average sex ratio in these villages is 941, which ranges between 897 to 1015 across these five villages. The Literacy Rate is quite low at 55.35% and during the consultations in the villages, it has been found that even amongst the literates, the level of literacy is quite low with hardly 1% of the population having a graduation degree. The village-wise details are given in Table below.

Name of Village	Number of Household	Population	Average HH Size	Sex Ratio	Literacy Rate
Thirumani	515	2,193	4.26	897	62.79
Balasamudra	165	914	5.54	928	61.49
Vollur	590	2448	4.15	905	53.27
Kyathaganacherlu	611	2380	3.90	1015	50.67
Rayacharlu	536	2359	4.40	953	52.95
Total	2,417	10,294	4.26	941	55.35

Over 40% of the population falls under the marginalised section of the society with nearly 22% falling under the category of Scheduled Caste and 18% under the category of Scheduled Tribe as shown in Table below.

Name of Village	SC Population	% of SC	ST Population	% of ST
Thirumani	402	18.33	358	16.32
Balasamudra	284	31.07	156	17.07
Vollur	663	27.08	289	11.81
Kyathaganacherlu	465	19.54	693	29.12
Rayacharlu	446	18.91	415	17.59
Total	2,260	21.95	1,911	18.56

During the consultations in the project villages, it has been found that though there is nearly 18% ST population but these are integrated into the mainstream, however, the landholding amongst SC and ST population is very minimal and fall under the category of marginal and small farmers including the landless. These sections are predominantly dependent on the agriculture labour requirements in the land belonging to large land owners.

The Work Force Participation Rate in these villages is 54.32%, with male and female participation rate of 60.56% of 47.70% respectively, as per Census. It is important to highlight here that the main workers are only about 80% of the total workers, whereas the balance over 20% are marginal workers.

Name of Village	Work Force Participation Rate			Main Workers as % of Total Workers		
	Total	Male	Female	Total	Male	Female
Thirumani	49.66	60.29	37.80	98.99	99.43	98.21
Balasamudra	55.80	56.33	55.23	93.33	95.51	90.95
Vollur	52.08	56.11	47.64	59.45	66.30	50.54
Kyathaganacherlu	56.30	62.32	50.38	79.78	88.86	68.71
Rayacharlu	58.41	65.48	51.00	78.81	83.44	72.57
Total	54.32	60.56	47.70	79.88	85.31	72.56

The distribution of workers given in Table below clearly shows that nearly 86% of the total workers are dependent on agriculture out of which only about 40% are cultivators whereas the remaining 46% are dependent on agriculture labour workers:.

Name of Village	Cultivators	Agriculture Labour	HH Industry and Other Services
Thirumani	30.03	51.79	18.18
Balasamudra	73.14	25.10	1.76
Vollur	41.33	49.18	9.49
Kyathaganacherlu	37.54	45.07	17.39
Rayacharlu	38.24	47.68	14.08
Total	40.36	46.14	13.50

During the consultations in these villages, it has been confirmed that a very large percentage of population is working as agriculture labour on the land belonging to the medium and large farmers with male and the female labour getting Rs. 200 and Rs. 150 per day respectively. One of the critical issues would be the impact of the project on the agriculture labour/ landless and especially on the marginalised sections of the society including the SC and ST population.

7.1.8 Land Ownership Profile

The total geographical area of the five villages in the project is about 10,333 Ha. As per the discussions with the local people, about 20% falls under the non-agricultural use including abadi, water bodies, roads, community facilities and amenities etc; and the balance area is under agriculture use, with only about 5% of the total area is being irrigated by tanks / bore well.

The proposed site area of about 4994 Ha, comprising of about 4811 Ha private land and about 183 Ha of government land has been included in the project as shown in Table below. The land included under the project is nearly 50% of the total land under these villages that measures about 10,333 Ha. The break-up of land-holdings under the five categories as per the Karnataka classification of land holding sizes for farmers clearly shows that the land holding of marginal and small farmers is merely 15%, whereas the number of land owners under these categories account for nearly 45% as shown in subsequent Table giving the break-up of number of owners under the five categories.

Name of Village	Land Holding							
	Marginal (Below 1 Ha)	Small (1 to 2 Ha)	Semi-medium (2 to 4 Ha)	Medium (4 to 10 Ha)	Large (Above 10 Ha)	Private Land in Ha	Government Land in Ha	Total Land in Ha
Thirumani	34.68	90.48	155.76	381.19	539.12	1201.24	139.59	1340.83
Vallur	16.63	55.90	187.97	440.12	106.33	806.94	0	806.94
Balasamudra	68.93	169.02	240.52	211.68	32.51	722.65	14.78	737.43
Rayacharlu	57.17	160.44	392.72	629.58	303.96	1543.87	28.45	1572.32
Kyathaganacherlu	23.51	26.18	42.97	86.64	357.38	536.68	0	536.68
Total	200.93	502.01	1019.93	1749.21	1339.30	4811.39	182.81	4994.20
Percentage	4.18	10.43	21.20	36.36	27.84	100.00		

There are 1422 landowners whose land is getting impacted under the project as per the village-wise details provided in Table below.

Name of Village	Number of Land owners					
	Marginal (Below 1 Ha)	Small (1 to 2 Ha)	Semi-medium (2 to 4 Ha)	Medium (4 to 10 Ha)	Large (Above 10 Ha)	Total
Thirumani	53	63	59	63	37	275
Vallur	23	36	63	70	8	200
Balasamudra	122	117	89	39	3	370

Rayacharlu	89	109	143	97	23	461
Kyathaganacherlu	44	18	15	14	25	116
Total	331	343	369	283	96	1422
Percentage	23.28	24.12	25.95	19.90	6.75	100.00

Many of these land owners have already given their consent for a 30-year term lease of their land for setting up of a Solar Park. Land owners in the vicinity of the proposed site have also expressed their interest in giving land on lease for solar power plant, which was confirmed during the consultations. The shape of the site is fairly regular with the total length of approximately 10 km and width varying between 2 to 5 km at different sections.

Although Solar power projects does not involve prior environmental clearance, however such projects involve land poling / acquisition; diversion of water resources meant for domestic uses, resettlement, loss of livelihood for the underprivileged / marginalized communities etc. An Environmental and Social Assessment study shall help avoid adverse impacts; wherein unlikely to be avoided, such impacts shall need to be mitigated or managed. The most critical issue is with regard to the livelihood and economic rehabilitation of agriculture labour who are dependent on the agricultural land in the area.

7.2 Baseline Social and Environmental Status – Rewa

7.2.1 Location Characteristics

The proposed site (81° 34' 40.799" E; 24° 28' 33.508" N) for Solar UMPP lies within Gurh tehsil (sub district) of Rewa district in the state of Madhya Pradesh at a distance of approximately 30 kms east of Rewa City. The district falls in the survey of India sheet numbers 63G, H and 63L and is bordered by Uttar Pradesh state in the north, on the east and south east by Sidhi district and Satna district in the west. The district is well connected by NH-7 with the adjacent district headquarters and other major towns.

The MPNRED has identified five villages of Gurh Tehsil namely Badwar, Barseta Desh, Barseta Pahar, Ramnagar Pahar and Etar Pahar for the purpose of delineation of project site for the proposed Solar Ultra Mega Power Project

7.2.2 Soil Characteristics & Major Crops

The proposed site forms part of the plateau of Rewa and Panna, also known as Vindhyan plateau and lies to the northeast of the Bundelkhand plateau. The maximum height of the plateau is 750 m. The Bhandar hills of the Vindhya State group and the Kymore ranges have a number of waterfalls with heights up to 450 m. The area is drained by the Ken, Sonar, Berma and Tons rivers. The covered area has most of its spread in Damoh, Panna, Satna and Rewa districts. Part of Rewa, Shahdol, Umaria and Sidhi districts form the part of Sone valley.

The state of Madhya Pradesh has a variety of soils ranging from rich clayey to gravelly. The north-eastern part of the state including Rewa district has mixed red and black soils. Major crops

cultivated in the study area villages include Paddy, Jowar, Tur, Soybean, Wheat, Gram, Lentil and Linseed.

7.2.3 Climatic Characteristics

The tropic of cancer passes 100 kms south of the proposed site. There are three distinctly defined seasons i.e. Rainy Season – Mid June to September end; Winter Season – October to mid-March; Summer Season – Mid-March to mid-June

The area enjoys tropical type climatic conditions. The climate of Rewa is subject to considerable extremes of temperature. The maximum average temperature has been recorded during the month of May & June at 42⁰ C, whereas minimum recorded temperature is 8⁰ C during the month of December and January. The wind direction is mainly from north to west. It is found that the velocity of wind is high compared with the wind velocity flowing other than this direction.

Annual rainfall in the state varies from 600 to 1600 mm. The average rainfall for the state is 1200 mm. The area receives rains mainly from the south-west monsoon, which sources 82% of the average annual rainfall of 1206 mm.

During the last decade, Rewa district has witnessed drought conditions in year 1991-92; 2002–03, 2004 -05, 2006-07 causing damage to crops and shortage of drinking water. However in year 1997-98 the district suffered from excessive rains causing flood like scenarios.

7.2.4 Drainage & Slope Characteristics

The central parts of the Rewa district are drained by Bichhia and Ghoghar rivers which ultimately merge in Tons river. The study area forms part of the 2A7E3 watershed (Tons basin) as per the watershed atlas prepared by the All India Soil and Land Use Survey. The study area being barren outcrop and hard rock surface has a very well defined drainage pattern. The study area being barren outcrop and hard rock surface has a very well defined drainage pattern. The proposed project sites are being drained by "Devdah nala" flowing east to west direction which joins "Bichia Nadi" near Gurh nagar panchayat settlement area, north-west of the proposed sites. The Gurh reserve forest towards the south of the proposed sites is drained by "Devdah nala" only.

The lowest elevation in the district is around 300m above MSL on the tons river bed while the highest elevation is 473m above MSL located east of kailashpur. The slopes for the area falling within the jurisdiction of the five villages identified for the purpose of delineation of the project site generally ranges less than 15% for majority of the land parcels.

7.2.5 Ground Water Characteristics

The demand for water for various uses such as drinking, irrigation, domestic and industrial purposes is increasing with time in general due to the increase in human population. The ground water of this region is affected by Carbonate (CO₃), and Bicarbonate (HCO₃), also known as temporary hardness. As per the available secondary data, Rewa-Gurh areas are presently facing acute shortage of water supply to fulfill the demand of human population.

7.2.6 Flora & Fauna

The table below presents the status of key environmental features in the study area:

No	Key Environmental Feature	Aerial Distance (Appox Kms)	Remarks / Observations
1	Forest (Protected / Reserve)	0	The Site is surrounded by Protected / Reserved Forest in the North and Southern Side
2	Natural Habitats (Critical Habitats) / National Wildlife Sanutary / National Park	9 Kms	Sone River stretch south of the proposed site is declared as a gharyial sanctuary
3	Biosphere Reserves	50 Kms	Bandhargarh & Sanjay Gandhi National Parks (more than 50 Kms)
4	Coasts	NA	Land locked area
5	Wetlands	NA	Bansagar Dam at 40 Kms distance
6	Surface Water Resources	9 Kms	Sone River South of the proposed Site
7	Designated Ground Water Recharge Zones	NA	No information is available
8	Nearest Major Highway / Roads		NH- 75 passing through the proposed Site
9	Mining Areas	NA	No information is available
10	Archaeological Sites / Physical or Cultural Heritage	5 Kms	Lord Shiva Temple & an old fort in ruins
11	Flooding & Seismic Risks		<ul style="list-style-type: none"> Floods affected 6-8 times in last 26 years Villages located on BIS Zone II & III Border, having moderate seismic risk
12	Areas devoted to other projects in vicinity	0 kms	<ul style="list-style-type: none"> The NH-75 is undergoing upgradation and changes in RoW/ Alignment. A camp site has been set up by the road civil works contractor.
13	Issues Related to Hazardous Waste Management	NA	No batteries to be used in transfer of power from solar PV modules to Grid.

7.2.7 Socio-Economic Profile of the study area

The Rewa district is predominantly a rural district with nearly 83% of the district population living in rural areas. The sub-district Gurh has 89% rural population and the 11% urban

population in the sub-district resides in the only urban area Gurh Nagar Panchayat (Tehsil Headquarter). The sex ratio in the project villages is 962 against district and sub-district average of 931 and 938 respectively, whereas the urban areas have a much lower sex ratio of 910 only.

Name		No. of HHs	Total Population	Avg HH Size	Male Population	Female Population	Sex Ratio
District							
Rewa	Total	526065	2365106	4.50	1225100	1140006	931
	Rural	450297	1969321	4.37	1017839	951482	935
	Urban	75768	395785	5.22	207261	188524	910
Sub-District							
Gurh	Total	30171	127323	4.22	65690	61633	938
	Rural	27338	112715	4.12	58040	54675	942
	Urban	2833	14608	5.16	7650	6958	910
Project Villages							
Badwar	Rural	1543	6168	4.00	3133	3035	969
Barseta	Rural	488	1595	3.27	791	804	1016
Ramnagar Pahar	Rural	9	37	4.11	19	18	947
Itar Pahar	Rural	623	2485	3.99	1300	1185	912
Total Project Villages		2663	10285	3.86	5243	5042	962

Source: Census of India, 2011

The SC and ST population together accounts for nearly 30% at all the three levels. In case of the project villages, nearly 21% of the total population belongs to Scheduled Tribe.

The district profile information available on the website of Rewa district indicates that nearly 80% of rural Households have low standard of living index.

Unit	Population	SC Population	% SC	ST Population	% ST
District-Rewa	2365106	383508	16.22	311985	13.19
Sub-District-Gurh	127323	18301	14.37	17411	13.67
Project Villages (4)	10285	999	9.71	2146	20.87

Source: Census of India, 2011

Table below presents the literacy rates for Rewa district, Gurh Sub-district and the project villages. It can be clearly observed that the literacy level amongst women in the project villages is very low at only about 54%.

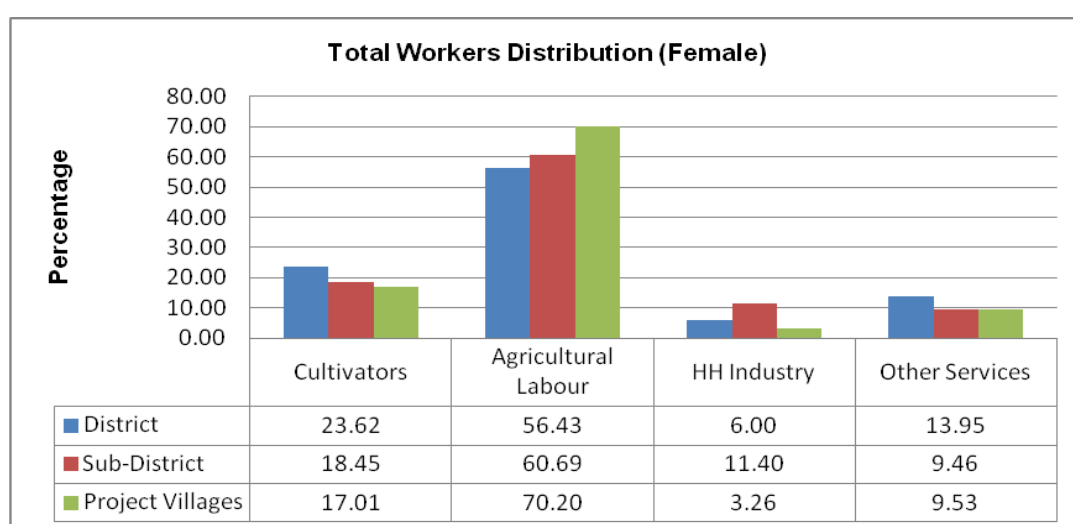
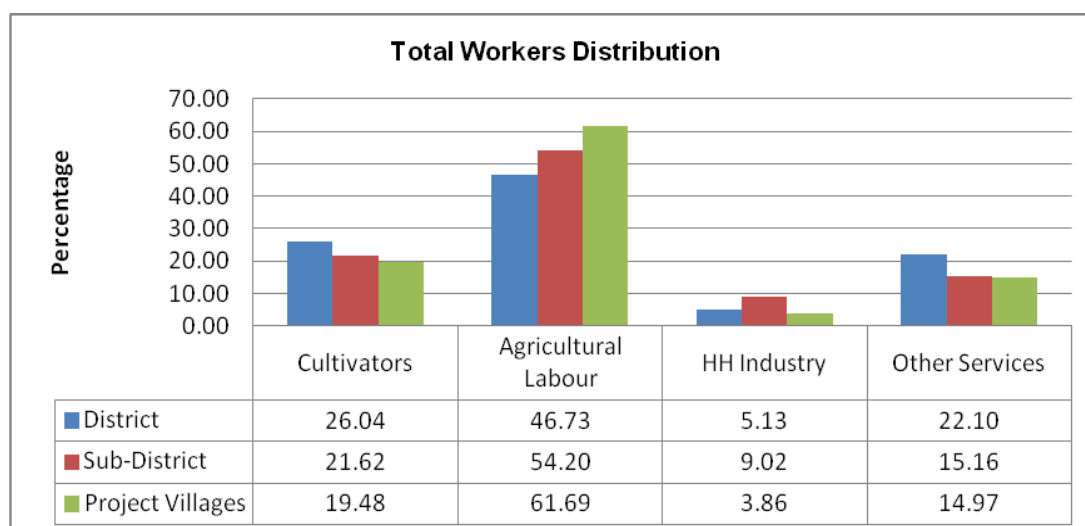
Unit	Literacy Rate		
	Total	Male	Female
District-Rewa	71.6	81.4	61.2
Sub-District-Gurh	69.5	80.1	58.4
Project Villages (4)	65.2	76.1	54.1

Source: Census of India, 2011

The workforce participation rate is nearly 45% for project villages with regard to the total workers out of which marginal workers account for nearly 16%. It is important to note here that higher WFPR is due to higher participation of women in the economic activity and it is important to highlight here that the workforce participation rate in the project villages and the district are higher compare to state and national rural averages of about 30 and 39 respectively. The residents of villages in vicinity of the study area are generally dependent on agriculture for their livelihood. Their income is supplemented by working as laborers in the nearby urban areas. The people living in vicinity of the forest area supplement their income by collection of non-nationalized forest produce and tendu patta.

Unit	Total Workers	Male Workers	Female Workers	Marginal Workers	Male Marginal Workers	Female Marginal Workers
District-Rewa	41.9	50.4	32.9	15.3	13.8	16.9
Sub-District-Gurh	45.2	51.2	38.9	18.0	15.3	20.9
Project Villages (4)	44.8	50.5	38.9	16.0	13.6	18.6

The Figure below provides the distribution of total workers into the categories of cultivators, agricultural labour, household industries and other services as defined in Census 2011 for total workers as well as by gender. It can be clearly observed that nearly 80% depend on agriculture including 62% of the total workers in the project villages working as agricultural labour against the district average of about 47%. The percentage of agricultural labour amongst women workers is as high as 70%.



7.2.8 Land Ownership Profile

Nearly 63% of the total land in these villages belongs to the government (including large share under forest). It can be observed that the average size of land per plot ranges between 0.11 Ha in Badwar village to 0.73 Ha in Ramnagar Pahar. Table below depicts the available government land parcels in each of the five villages including those classified under the forest and other categories as per the data available on the Land records department URL

Aspect	Badwar	Barseta Desh	Barseta Pahar	Itar Pahar	Ramnagar Pahar
Number of Plots					
Total	9360	2983	135	2199	773
Government Plots	597	196	76	357	145
Private Plots	8763	2787	59	1842	628
Area in Ha					
Total Area in Ha	2730.282	1071.132	477.41	3705	773.902

Aspect Number of Plots	Badwar	Barseta Desh	Barseta Pahar	Itar Pahar	Ramnagar Pahar
Area of Govt Land in Ha	1707.743	617.949	457.282	2366.89	317.404
Area of Private Land in Ha	1022.539	453.183	20.128	1338.11	456.498
Average Size of Private Plot in Ha	0.1166	0.1626	0.3411	0.7264	0.7269

The land-use analysis and the analysis of project villages in the area identified for the project clearly shows that majority of the land south of the road from Gurh is a rocky land with certain small patches of land parcels suitable for agriculture.

The area identified for the proposed solar UMPP is predominantly open scrub wastelands. Agriculture is being practiced in a few selected small parcels which are mainly rain fed (single crop – Kharif crop) as the area identified for agriculture lacks any major irrigation sources. There were also few scattered built-up structures within the proposed site as observed during site visits. The private land parcels are interlocked between the government land parcels. The private land parcels interlocked between the government land parcels has resulted in certain cases the encroachment on the government land in the form of structures at the ground level due to limited availability of cultivable land.

8 ANNEXURE 2: ESIA TOR (PAVAGADA)

8.1 ESIA of the proposed Solar Sub-project

This assignment is designed to assess the impact of the proposed Solar program/ project and recommend a set of measures and criteria for managing impacts in the project area and its surrounding; as per the requirements of the Government of India and the World Bank, as applicable for the proposed solar program/ project in the state of Karnataka to be executed by SPPD, a joint venture of centre (MNRE) government and state government.

8.1.1 Background:

The Government of India (GoI) has identified the power sector as key to achieving its goals of high and sustainable economic growth and accelerated poverty alleviation. India's Eleventh Five Year Plan (2007–12) and the Integrated Energy Policy, 2005 sought to eradicate poverty, and have created new opportunities to address India's rural energy problems. In addition, the GoI has the ambitious goal of 100% household electrification. Now, the Twelfth Five year Plan (2012-2017) focusses on faster, inclusive and a more sustainable growth agenda. The Phase-2 of Jawaharlal Nehru National Solar Mission (JNNSM) focusses on a more state-led solar power growth in terms of solar parks and facilities, and new financing models for implementation. The implementation and success of the JNNSM and state solar policies will proceed on the basis of the technology advancements and cost reduction, which will be necessary for rapid scale-up and to achieve the target of 20,000 megawatts of grid-connected solar power. Ministry of New and Renewable Energy (MNRE) has identified certain states to be a potential state for engagement wherein a comprehensive solar development initiative is being thought about.

8.1.2 Rationale and Objective:

While, solar projects in India do not require a regulatory environmental clearance, it is also understood that large-scale projects will have environmental impacts and these impacts need to be avoided as far as possible.

For large-scale programs or projects (even if environmental clearance is not required), it is unlikely that projects could be undertaken without any adverse impacts on natural resources, forests, habitats (such as coasts and wetlands); or where resettlement, acquisition of productive land, diversion of water meant for other competing uses is required domestic is not required.

However, regulatory clearances processes and procedures are to be followed and complied even in case of solar projects. These regulatory clearances include:

- i. Consent to establish and operate under the Water and Air Acts; as regulatory clearance for all solar and wind projects
- ii. Commitment for water availability for construction and operations phase:
 - a. Consent to withdraw groundwater, if any, or use of surface water resources after applicable clearance and allocation of resource.

- b. If located on the designated groundwater recharge zones, regulatory clearances from State Water Resources Department (WRD) or Central Ground Water Board (CGWB) will be required.
- iii. If located in the close vicinity of rivers, wetlands, state level clearances will be required.
- iv. If located in forest areas, regulatory clearances under the Forest Conservation Act and the Forest Dwellers' Rights Act (additionally wildlife clearance will be required depending if the forest in the vicinity is a national park or a wildlife sanctuary).
- v. Establishing clearance requirements related to alignment of the transmission lines for transfer of generated solar power to National and State grid.
- vi. Usual clearances will be required if land acquisition is involved.

The requirements of the above-mentioned regulatory clearances including any other clearance requirements applicable for the proposed Solar Ultra Mega Power Project (UMPP) shall be evaluated by the appointed consultant.

An initial assessment i.e. screening study has been undertaken based on secondary information available for the proposed sites. The baseline conditions study suggests the key environmental and social aspects that need to be focused upon as part of the ESIA study. The baseline study will be shared with the selected consultant, however any additional data collection, as required, shall be undertaken by the appointed consultant.

The key objective of this study is to conduct Environmental and Social Impact Assessment (ESIA) with a view to identify the critical environmental and social concerns in the ultra-mega solar power projects and address them as an integral part of project design. The specific objective includes:

- i. To assess the existing status of environment and social in the study area and its vicinity (10 km radius) and to identify threats and issues which have potential to adversely impact important environmental and social features of the project influence area.
- ii. Carry out environmental and social analysis of project area and potential activities envisaged under the project.
- iii. Analyze various options available in the site layout and arrangements for ancillary facilities like water supply, drainage, access, etc. to minimize adverse impacts and enhance positive impacts, where feasible
- iv. Identification of the project affected families; assessment of loss of livelihood / property resources for people living within the proposed site and in its immediate vicinity through primary census surveys covering all project affected families/ consultations.
- v. Assess impacts on the indigenous/marginalized communities within the site and its influence area.
- vi. Prepare a site specific environmental and social assessment report by documenting environmental features of the project area, socio-economic and cultural status of community in and around the probable project site.
- vii. To identify the environmental and social issues associated with implementation of / solar farm and develop environmental codes of practices for common activities like site preparation, installation of panels, management of waste, occupational health and

safety, etc. and social exclusion list that need to be followed during various stages such as planning, construction and operation & maintenance.

- viii. This assessment should also include considerations of safety – both for the workers in the site and related facilities, as well as of nearby residents, especially those that live close to ancillary facilities like borrow areas, for instance.
- ix. To undertake consultations with potentially affected people and to take these into account during the preparation of the management plans that would be executed before the developers start working on the site.
- x. To assist the client in establishing the site boundary on-site by integrating the total station outputs (available with client department) with the baseline study outputs.
- xi. To identify portions of the codes of practice/management framework that need to be integrated with the bidding documents to ensure that the prospective bidders are aware of what all will be required during project implementation and operation from an environmental, health and safety, as well as social perspective.

8.1.3 Scope of the ESIA

The Environmental and Social Impact Assessment (ESIA) study (and the report) will specifically cover the following:

- i. **Defining the Project/Project Description:** Providing a Project description with focus on understanding the environmental and social setting and sensitivities for the proposed solar power project, including an overview of the land lease process and resettlement requirements and its impacts on indigenous peoples and other marginalized families, if any. This would also include any related facilities that may be required (e.g., access roads, transmission lines and substations, water supply arrangements, housing, raw material etc).
- ii. **Laying down Policy, legal, and administrative framework:** Discussing the policy, legal and administrative framework within which the assessment is carried out, national and state specific regulations (including permits and licenses), and The World Bank's Operational Policies and Best Practices and IFC Performance Standards. Reviewing the Social & Environmental compliance requirement with respect to the above; present an overview of *Government of India's and State Government's social policies, legislations, regulatory and administrative frameworks* in conjunction with the World Bank's safeguard policies and IFC Performance Standards. Where gaps exist between these policies, make recommendations to bridge the gaps in the context of the proposed project.
- iii. **Generating Data for Environmental and Social Assessment/:** Collection and generation of relevant social and environmental (physical, biological) data (primary & secondary) within the study area. This data should be relevant to decisions about project location, design, construction, operation, or mitigation measures. The data generation should specifically focus on issues related to
 - a. Water- its quality, availability and adequacy vis-à-vis the requirements during different phases of the project life cycle

- b. Land and physical environment
- c. Physiographic characteristics
- d. Prepare **Socio-economic profile** in terms of demographic characteristics, land use pattern, economic profile, occupational pattern and other socio-economic parameters.
- e. Identify and **analyze the issues of vulnerable communities and gender**
- f. Land, access requirements, land use, and involuntary resettlement, if any
- g. Assess the likely impacts of the sub-project, in terms of land lease (loss of lands, houses, livelihood, etc.), and resultant involuntary resettlement, if any and undertake the census of potential project affected people;
- h. Based on the assessment of potential social and economic impacts, the SIA should establish criteria that will assist in the formulation of strategies; to the extent possible maximize project benefits to the local population and minimize adverse impacts of the project interventions on the affected communities;
- i. The consultants would study the living patterns of vulnerable population (including tribal, scheduled castes, women, landless, households below poverty line, etc.) in the project area and assess whether they are involved in community decision making process. If the findings reveal that certain groups are excluded in the development process, then the consultants should develop a strategy for their inclusion in project development and operation as well as in preparing social risk management plan.
- j. Identify likely loss of community assets including the religious structures and common property resources (e.g. forest, grazing land, drinking water source, etc); the impacts of their loss on the local population, and prepare mitigation plans
- k. Ecology or biodiversity
- l. Project design interventions including power evacuation
- m. Physical or cultural heritage (if any)
- n. Flooding and seismic risk
- o. Hazardous and domestic waste management, etc.
- p. Review of the land take/lease process to assess any legacy or current/existing issues (like informal settlers, livelihood dependence, other usage etc) on the allotted land. It will also look at current and proposed development activities within the project's area of influence, including those not directly connected to the project
- iv. **Information Disclosure, Consultation and Participation:** Describe the consultation and participation mechanisms adopted, including the activities undertaken to disseminate project and resettlement information during project design and engaging stakeholders. The results of consultations with affected persons, the host communities, civil society organizations and other stakeholders, and KREDL's (GoK) response to address the concerns raised will be summarized.
- v. **Conduct stakeholders' consultation** that ensures that all key stakeholders are aware of the objectives and potential environmental and social impacts of the proposed project,

and that their views are incorporated into the projects' design as appropriate. Stakeholders' will include all those who are directly or indirectly dependent on the project site(s). **Therefore, identify the key stakeholders** (Government, NGOs, CSOs, Academicians, etc.) in the project area; analyze their perspectives of the project. The analysis shall be carried out for both primary and secondary stakeholders at project level through structured discussions on the (a) importance of addressing social issues (b) impressions of past efforts, if any (c) suggestions for what to do differently in future (d) key issues (goals and safeguards) to be addressed; and (e) issues of co-ordination and / or conflict among various stake holders. The analysis shall be summarized in a structured manner and shall clearly bring out the implications for project design.

- vi. **Review of land lease process,:** The consultant, based on documentation provided by KREDL, site visits and consultations with the land owner, will review the following (i) processes followed for land procurement including an assessment of the adequacy of information disclosed to the landowners and the bargaining power of landowners to negotiate for fair compensation, (ii) policies and laws (if any) that are applicable for negotiated settlements in the area, (iii) confirmation of third party validation of the negotiations carried out, (iv) mechanisms adopted for calculating the lease rate of land and other assets impacted, and (v) record keeping requirements of the negotiation process.
- vii. **Assessing Social and Environmental Impacts and Mitigation Measures:** Assessing the Social and Environmental impacts (both positive and negative) of solar energy project, with potential assessment of cumulative impacts (linked to development or other solar projects and the overall park), if relevant and as appropriate. Identify mitigation measures and any residual negative impacts that cannot be mitigated. Also evaluate impacts and risks from associated facilities and other third party activities. The mitigation measures shall be presented in the form of Environmental Management Plan (EMP), which shall include but not limited to:
 - a. Rainwater harvesting
 - b. Occupational health and safety
 - c. Labour working conditions
 - d. Construction labour management
 - e. Environmental action and monitoring plan
 - f. Waste Management including for Hazardous waste
 - g. Disaster management plan
 - h. Develop an R&R entitlement framework in consultation with the affected people and other stakeholders and prepare a resettlement action plan (RAP) or social management plan (SMP) which is acceptable to the project affected people;
 - i. Description of the entitlements for various categories of impacts, mitigation measures to address livelihood impacts, etc.
 - j. Interventions needed for skill development and overall social upliftment of the communities in the project influence area
 - k. To develop a consultation framework for participatory planning and implementation of proposed mitigation plan;

- l. Assess the capacity of institutions and mechanisms for implementing social development aspects of the project implementation including the social safeguard plans and recommend capacity building measures; and,
 - m. Develop monitoring and evaluation mechanism to assess social development outcomes
 - n. Preparation of Gender action Plan and Indigenous Peoples Development Plan (if required)
 - o. Assessment and mitigation measures for health and safety issues of the workforce and community, as well as compliance with national labor laws, IFC Performance Standard 2 on Labor and Working Conditions and World Bank Group EHS Guidelines
- viii. **Analyzing the Alternatives:** Comparing reasonable alternatives to the proposed project site, technology, design, and operation in terms of their potential social environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. It would also state the basis for selecting the particular site and project design justifying recommended approaches to pollution prevention and abatement.
- ix. **Grievance Redress Mechanism:** Description of the community grievance redress framework/mechanism (both informal and formal channels), setting out the time frame and mechanisms for resolving complaints about environmental and social performance.
- x. **Draft inputs for inclusion in the Bidding Documents:** These would include contractual requirements, specific indicators that would be monitored during implementation and operation by the successful bidder, and (dis)incentives for compliance with requirements as well as how any disputes relating to performance on these aspects would be managed.
- xi. **Conclusion and Recommendation** - Providing conclusions drawn from the assessment and providing recommendations.

An Executive Summary of the entire study will be prepared and once finalized will be translated into Kannada for disclosure purposes both in the project area and in the websites of JV and/or KREDL.

8.1.4 OUTPUTS and Payments

The following outputs are expected during the course of the assignment

Report Title	Printed Copies	Soft Copies	Time Frame from start of assignment	Payment as % of total cost
				10% on signing of contract

Report Title	Printed Copies	Soft Copies	Time Frame from start of assignment	Payment as % of total cost
Draft ESIA and Consultations Report	3	6	4 weeks	50
Final ESIA and Consultations Report	3	6	2 weeks after receiving comments	30%
Inputs to the Bidding documents for developers	6	12	14 weeks	10%

8.1.5 EXPERTISE needed

The following indicative expertise is suggested for the assignment. The consultant is expected, however, to undertake their own assessment and propose their best team to successfully deliver the above scope of work.

S. No.	Expertise	Qualification	Input required
1.	Team Leader	<p>A post-graduate / doctoral degree holder in Environmental Sciences or a related field with at least 15 years of experience in delivering ESIA's for development projects</p> <p>S/he should have demonstrated experience of working with and leading multi-sectoral teams</p> <p>S/he should be conversant with relevant regulations in Karnataka and multilateral funding agencies like the World Bank</p> <p>S/he should be fluent in English and similar level of competency in Hindi would be an advantage</p> <p>Prior experience of developing codes of practice and other tools for management of generic issues would be an asset</p> <p>S/he should have experience of organizing and analyzing environmental survey results and incorporating the findings into the report</p>	14 weeks
2	Social Expert	<p>A post-graduate/doctoral degree holder in Social Sciences, or a related field with at least 15 years of undertaking (E)SIA studies, preferably for development projects, with funding support from multilateral agencies like World Bank</p> <p>S/he should have experience of organizing consultations with potentially affected persons</p> <p>Familiarity with the relevant regulations in Karnataka would be an advantage</p> <p>Fluency in Kannada would be required and that in English</p>	14 weeks

S. No.	Expertise	Qualification	Input required
		would be desirable	
4	Support Staff	As per need	As per need

8.1.6 FACILITIES to be provided by the Client

The client will provide letters of introduction to various State and Central Government departments/entities upon specific request by the consultant. It is expected that the consultant will identify these early in the study, preferably by the Inception Report stage. No other facilities will be provided by the Client.

9 ANNEXURE 3: M&E TOR

9.1 SCOPE OF WORK

The objective to carry out a monthly review of social and environmental safeguard activities being implemented in the project and provide specific recommendations to mitigate the issues identified during the review period.

9.1.1 Resettlement Action Plan and Land Acquisition

- x. Verify the process followed in determining the compensation/lease rent;
- xi. Verify timely payment of compensation/lease rent to the landowners once the compensation/lease rent awards are made. Participate in some of the compensation/lease rent distribution meetings to ascertain the process followed for distribution of compensation/lease rent;
- xii. Verify the process followed in the dissemination and administration of reimbursement of stamp duty or taxes in case those who buy alternative lands and houses out of compensation money;
- xiii. Verify the process followed for dealing with those cases where severance of lands are involved ;
- xiv. Ascertain how the various provisions including payment of additional compensation in case of delay in completing the land acquisition process are administered;
- xv. Follow up on the status for dealing with grievances related to compensation rates/lease rent;
- xvi. Report on any additional land acquisition/procurement requirements due to expansion plans;
- xvii. Identify gap and critical areas in implementation process and develop appropriate corrective actions in consultation with social & environmental officer
- xviii. Carry out random sample check at field level to assess whether land acquisition/procurement and/or resettlement and/or social program objectives have generally been met. The sampling size will be prepared in consultation with SPPD;
- xix. Monitor effectiveness of the grievance system;
- xx. Liaison with SPPD, Developer, NGO (engaged for implementation of RAP), and project affected communities to review and report progress against RAP;
- xxi. Verify and ascertain that the Entitlements as available in the Entitlement Matrix are administered to the various category of PAPs;
- xxii. Ascertain that the various proposals made in RAP to mitigate the impacts are implemented in the manner it was described in the RAP;
- xxiii. Ascertain how various suggestion and concerns raised by the local people during consultations are incorporated or addressed during the project implementation;
- xxiv. Report on the Status of completion of reconstruction of affected community assets prior to handing over of the land to the developer;

- xxv. Report on the functioning of grievance redress mechanism to deal with the complainants grievances related to RAP implementation;
- xxvi. Review the functioning of Data Base Management to track the implementation progress;
- xxvii. Review the periodical internal monitoring reports and identify any gaps in reporting or delay in implementation progress;
- xxviii. Verify the coordination between Developer and RAP implementation;
- xxix. Monitor the role of consultants and NGOs in RAP implementation and identify any improvements required and suggestion for their services;
- xxx. Monitor the progress in providing unskilled jobs to the PAPs and local people;
- xxxi. Participate in the meetings and consultations carried out by the implementing agency or carry out independent consultations to get first hand feedback from the affected and local people on the project implementation in general and RAP Implementation in particular;
- xxxii. Any others tasks that are appropriate to deal with resettlement impacts and PAPs/local villagers concerns;
- xxxiii. Report other social safeguard issues such as incidence of child labor, unequal wages, unhealthy work camps posing health or security hazards to the workers, etc.
- xxxiv. Preparation of Monthly progress report on all social issues

9.1.2 Environmental Management

- i. Review the EMP and recommend the implementation plan for ensuring its implementation
- ii. Formulate necessary reporting formats for the SPPD/Developer contractors to monitor the implementation of environmental management activities
- iii. Plan and impart regular orientation / training programs for the SPPD/Developer staff on the effective implementation of Environmental Management measures in the project
- iv. Review if Labour camp is set up as per EMP and monitor its satisfactory operation
- v. Verify proper Health & Safety measures are in place for labours, employees working at site
- vi. Check trees are removed following all procedures and with clearance from Forest Dept. Verify compensation paid to the owners of trees which are felled to clear the site as per the provisions
- vii. Review if Developer avoid soil pollution
- viii. Monitor pollutants not making its way to water bodies and advise Social & Environmental Officer
- ix. Check construction work is not carried during the night and during rainy season, without necessary safety and precautionary measures.
- x. Ensure that the Developer carries out regular environmental monitoring as per the EMP and recommend necessary mitigation measures, where the parameters exceed the permissible standards

- xi. Verify adequate dust suppression measures are undertaken and these follow CPCB emission norms; periodical AAQ monitoring data to be checked w.r.t. standards
- xii. Monitor that the construction activities are carried without causing any unwanted land subsidence
- xiii. Check solid waste and other types of wastes including hazardous waste are managed as per EMP and regulatory provision
- xiv. Verify whether permission from the authority is obtained for withdrawal of water from ground water & / or natural water body
- xv. Participate in the meetings and consultations held by the implementing agencies/developer
- xvi. Report any lapse by Developer on environmental aspects to the SPPD with specific recommendations for remedial actions.
- xvii. Preparation of Monthly progress report on all environmental issues