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Government of Uttarakhand

Uttarakhand Disaster Recovery Project – Additional Financing

(P146653)

The World Bank Assisted

Environment Social Management Framework

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1. Introduction

1.1 Background

1. The State of Uttarakhand was carved out of Uttar Pradesh on November 9, 2000 to become the 27th State of India. Located at the foothills of the Himalayan mountain ranges, it is predominantly a hilly State, having international boundaries with the People's Republic of China in the north and Nepal in the east. On its north-west lies the State of Himachal Pradesh, while on the south it is bounded by Uttar Pradesh. The high Himalayan ranges and glaciers form most of the northern parts of the state while the lower reaches are densely forested (covering about 60% of the state) with rich natural resources and wildlife habitats. Two of India's major rivers, the Ganga and the Yamuna, originate from Uttarakhand.

2. The State of Uttarakhand comprises of 13 districts that are grouped into two regions (Kumaun and Garhwal) and has a total geographical area of 53,484 sq. km. The economy of the State primarily depends on agriculture and tourism. The State is home to some of the most important pilgrimage centres known as the "*Char-Dham*", i.e. the Gangotri, Yamunotri, Kedarnath and Badrinath, all of which are situated in the northern region. The state receives over 32 million tourists annually, a majority of whom visit the state during the peak summer season (May-July) for pilgrimage and recreation.

3. The State has a very fragile terrain that, by virtue of its very origin, is prone to natural disasters. The entire State falls within Zone IV and Zone V (Zone V represents the highest level of seismicity) of the Earthquake Zoning Map of India. The districts of Bageshwar, Chamoli, Pithoragarh, Rudraprayag and Uttarkashi all fall within the Seismic Zone V. In the recent past the State has witnessed two major earthquakes (Uttarkashi 1991 and Chamoli 1999). Every year, the state faces massive losses, particularly during the monsoon season, due to rains, cloudbursts, flash floods, landslides, floods, hailstorms and water logging events.

1.2 Disaster June 2013

4. The monsoon in June 2013 arrived almost two weeks earlier than expected in Uttarakhand. During June 15 to 17, 2013, cloud bursts and heavy (64.5 - 124.4 mm) to very heavy rainfall (124.5 – 244.4 mm) hit several parts of the higher reaches of the Himalayas in the State of Uttarakhand. This unprecedented rainfall resulted in a sudden increase in water levels giving rise to flash floods in the Mandakini, Alakananda, Bhagirathi and other river basins and also caused extensive landslides at various locations. Adding to this, continuous rains and melting of the Chorabari glacier caused waters in the Chorabari Lake to raise. The lake's weak moraine barrier gave way and a huge volume of water along with large glacial boulders came down the channel to the east devastating Kedarnath town, Rambara, Gaurikund and other places in its wake. According to official sources, over 900,000 people have been affected by the event in the state of Uttarakhand.

5. The districts of Bageshwar, Chamoli, Pithoragarh, Rudraprayag and Uttarkashi were most affected by this disaster. This region is among the country's most important pilgrimage

circuit and as the disaster coincided with the peak tourist and pilgrimage season, it significantly increased the number of causalities, missing, and affected population. A total of 580 human lives were lost; over 5,200 people are still reported as missing; 4,200 villages were affected; 9,200 cattle/livestock lost; and 3,320 houses were fully damaged. This event also left over 70,000 tourists and 100,000 local inhabitants stranded in the upper reaches of the mountain terrain.

6. The numerous landslides and toe erosion by the sediment loaded rivers caused breaching of roads/highways at many locations and washed away several bridges (steel girder bridges, beam bridges, suspension/cable bridges). Traffic was disrupted along all national highways and link roads along with the disruption of telecommunication lines, all adding to the impact of the disaster. Many hotels, rest houses and shops around the temple in Kedarnath were completely destroyed.

7. The Government of Uttarakhand (GoU), with assistance from the Indian Army, Indian Air Force (IAF), Indo-Tibetan Border Police (ITBP) and the National Disaster Response Force (NDRF), was extremely proactive with emergency relief and evacuation operations in the aftermath of the disaster. Despite the heavy rains that delayed and complicated the operations, the IAF, the Indian Army, the Paramilitary Troops, civilian helicopters, along with road vehicles evacuated more than 110,000 people from these flood affected areas.

8. The World Bank (WB) and the Asian Development Bank (ADB) on receiving a request from the Department of Economic Affairs (DEA), (GoI), fielded a Joint Rapid Damage and Needs Assessment (JRDNA) Mission within the State. The JRDNA team visited the State during July 29 to August 07, 2013, and in collaboration with the GoU undertook a multi-sectoral assessment of the damages and laid the grounds for an immediate recovery and reconstruction needs framework. While the disaster affected almost all districts within the state, the main focus of the assessment was on five districts that were most affected: Bageshwar, Chamoli, Pithoragarh, Rudraprayag, and Uttarkashi.

1.3 PROJECT DEVELOPMENT OBJECTIVE

1.3.1 PDO

9. To restore housing, rural connectivity and build resilience of communities in Uttarakhand and increase the technical capacity of the State entities to respond promptly and effectively to an eligible crisis or emergency.

1.3.2 Project Beneficiaries

10. The primary beneficiaries would be the communities of the affected districts in the State that would benefit from the risk mitigation infrastructures. Through strengthening of disaster risk management systems and institutions, the project has the potential to benefit the entire State of Uttarakhand.

1.3.3 PDO Level Results Indicators

24. The project objective will be monitored by the following indicators.

- Targeted affected households with multi-hazard resilient housing
- Targeted affected villages with restored connectivity
- Departments that make use of information generated by USDMA

1.4 PROJECT DESCRIPTION

1.4.1 Project Components

25. Based on the findings from the JRDNA, The Uttarakhand Disaster Recovery Project (UDRP) proposes the following five components that cover the immediate recovery and reconstruction needs within the most affected districts of the State and future oriented risk reduction efforts. A short description of objectives and activities in each of the components is given below:

Component 1: Resilient Infrastructure Reconstruction – US$ 31 million

26. The objective of this component is to focus on the immediate needs of reconstruction of damaged houses and public buildings. The aim is to reduce vulnerability of the affected population and restore access to basic services of governance.

27. *Subcomponent 1.1 Resilient Permanent Housing- US$ 27 million* - This will involve building about 2,500 permanent houses that would be multi-disaster resilient. Houses will built under three categories; 1. Houses constructed on the land of households who have title deeds to their land and that are safe for construction; 2. Construction of cluster houses for households that have lost both their houses and land due to the disaster, on land available within the village area; 3. Construction of cluster houses relocated to a new area for households that have lost both their houses and land due to the disaster. The land for this category will be provided by GoU, developed with school building, primary health centres, community centres etc.

28. *Subcomponent 1.2 Resilient Public Buildings- US$ 4 million-* This swill support the reconstruction of damaged public buildings, such as Panchayati Raj Institution (PRI), Block and District offices and technical education institutes, including restoration of partially damaged and reconstruction of fully damaged structures, equipment and furniture.

Component 2: Rural Road Connectivity – US$ 155 million

29. The objective of this component is to restore the connectivity lost due to the disaster through the reconstruction of damaged roads and bridges: village roads, Other District Roads (ODRs)[1], bridle roads and bridle bridges. The roads and bridges will be designed to withstand earthquake and flood forces as per the latest official design guidelines. The affected rural areas will be benefitted by the restored access to the market thereby

[1] ODRs are generally the link roads between Village Roads and Major District Roads (MDRs)

increasing the economic growth in these areas and timely access to health and education services.

30. *Subcomponent 2.1 Village/ Rural Roads - US$ 120 million* - This will support the reconstruction of about 3,600 kms of damaged village roads, following the PMGSY program standards and will include construction of new drainage woks and bridges, retaining and breast walls and other structures to prevent landslides, and minor realignments.

31. *Subcomponent 2.2 Other District Roads (ODR) - US$ 13 million* - This will involve the reconstruction of about 675 kms of damaged ODRs, linking village roads to Major District Roads (MDRs), State Highways (SH) and/or National Highways (NH) to increase access and provide opportunities for overall economic development.

32. *Subcomponent 2.3 Bridle Roads and Bridges - US$22 million* - This will undertake the reconstruction of about 440 kms bridle roads and about 140 bridle bridges, facilitating pedestrian connectivity for remotely located villages.

Component 3: Technical Assistance and Capacity Building for Disaster Risk Management - US$ 38 million

33. The objective of this component is to enhance the capabilities of government entities and others in risk mitigation and response. This component would entail the following tasks:

34. *Subcomponent 3.1: Risk Assessment, Modeling and Capacity Enhancement of Uttarakhand Space Applications Center (USAC) - US$ 10 million*: This will provide technical assistance to institutions to plan, set-up and implement a multi-hazard risk assessment of Uttarakhand. This subcomponent will include: (a) development of the framework and implementation of multi-hazard risk assessment models for Uttarakhand; (b) development of a historic hazard and loss database; (c) establishment of a technical advisory group for the multi-hazard risk assessment; (d) acquisition and processing of high-resolution satellite data for risk assessment; (e) development of training of trainers courses to build sustainable risk assessment capacity; (f) development of a monitoring and evaluation framework; (g) development of a tool that will allow the optimal utilization of risk information and increase the resilience of the communities and DRM capacity of the state; (h) capacity enhancement of USAC .

35. *Subcomponent 3.2: Establishment of a Decision Support System (DSS) - US$ 3 million:* This will entail setting up a DSS that will integrate and analyze information from multiple sources in a geo-spatial integrated system. The system will be designed to display information and provide access in a user-friendly manner.

36. *Subcomponent 3.3: River Morphology Study - US$ 3 million:* This will support the study of the entire morphology of some key rivers impacted by the disaster. The study will also look into analyzing and identifying critical protection works needed for river bank strengthening.

37. *Subcomponent 3.4: Slope Stabilization Study - US$ 4 million:* This subcomponent would include learning on slope stabilization from existing successful techniques, ongoing cutting edge work and research in this sector, and introduce appropriate technology for slope

stabilization for Uttarakhand through small demonstrative works.

38. *Subcomponent 3.5: Strengthening of the Uttarakhand State Disaster Management Authority (USDMA) - US$ 5 million:* This will entail developing the institutional set up of the USDMA, technical enhancement of the facilities at the DMMC, training, regular drills for emergency operations centers and Disaster Management Officers at the District and State levels.

39. *Subcomponent 3.6: Strengthening Hydro-meteorological network and Early Warning Systems (EWS) - US$ 10 million:* This will review existing hydro-meteorological capabilities at the state and national level, and will develop and implement a hydro-meteorological modernization plan for Uttarakhand. This subcomponent will also review existing EWS, identify gaps and establish a robust, fail safe EWS in the state including optimum use of strengthened networks and facilities.

40. *Subcomponent 3.7: Strengthening Emergency Response Capacity - US$ 3 million:* This subcomponent will focus on strengthening the capacity of the State's disaster response force, fire services personnel and other immediate key response agencies in responding adequately to disaster situations through better search and rescue equipment and enhanced training.

***Component 4: Financing Disaster Response Expenses* – US$ 12 million**

41. This component will support the financing of eligible expenses already incurred by the State during the disaster response period. The expenses eligible include fuel for helicopter rescue missions, hiring of heavy equipment for clearing of roads and any other "positive goods" listed items that are mutually agreed to for reimbursement by GoU and the World Bank.

***Component 5: Implementation Support* – US$ 14 million**

42. This component will support incremental operating costs of the project, including the operation of the Project Management Unit (PMU) and respective Project Implementation Units (PIUs). The component will also include creation of small, temporary field implementation offices with necessary equipment, furniture etc. In addition, the component will include consultancies required for the preparation and supervision of specific activities, trainings, exposure visits and knowledge exchange programs. An agency will be appointed to provide technical and social support to the Owner Driven Construction of Houses (ODCH).

***Component 6: Contingency Emergency Response* – US$ 0 million**

43. Following an adverse natural event that causes a major natural disaster, the respective government may request the Bank to re-allocate project funds to support response and reconstruction. This component would draw resources from the unallocated expenditure category and/or allow the government to request the Bank to re-categorize and reallocate

financing from other project components to partially cover emergency response and recovery costs. This component could also be used to channel additional funds should they become available as a result of an eligible emergency.

44.

2. Environment and Social Baseline

2.1 Environment Baseline

2.1.1 Geography

The State of Uttarakhand has a total area of 53,483 sq. km. with a population density of 189 persons per sq. km. which is less than the national average of 382 persons per sq. km. There are 13 districts in Uttarakhand which are grouped into two regions; Garhwal and Kumaun. The Garhwal region includes seven districts (Dehradun, Haridwar, Tehri Garhwal, Uttarkashi, Chamoli, Pauri Garhwal and Rudraprayag), while Kumaun region includes six districts (Almora, Bageshwar, Champawat, Nainital, Pithoragarh and Udham Singh Nagar). Out of the 13 districts of the state, 3 are in plains and the remaining 10 are hill districts. Geographically the state can broadly be divided into three zones, namely;

a) **Upper hills**: Uttarkashi, Chamoli, Rudraprayag, Pithoragarh and Bageshwar
b) **Middle hills**: Tehri Garhwal, Garhwal, Almora, and Champawat, the hill regions of Nainital and Chakrata tehsil of Dehradun
c) **Foothills**: The remaining area of Dehradun, Nainital, Haridwar and Udham Singh Nagar.

2.1.2 Seismicity

According to the Earthquake zonation map of India the state of Uttarakhand falls in Zone IV and Zone V. The districts of Dehradun, Haridwar, Pauri, Tehri, Nainital, Champavat, Udham Singh Nagar and parts of Almora and Uttarkashi fall under Zone IV. The districts of Rudraprayag, Chamoli, Bageshwar, Pithoragarh and parts of Almora and Uttarkashi fall under Zone V.

2.1.3 Soils

Uttarakhand has various types of soils, all of which are susceptible to soil erosion. In the north, the soil ranges from gravel (debris from glaciers) to stiff clay. Brown forest soil, often shallow, gravelly, and rich in organic content, is found farther to the south. The Bhabar area is characterized by soils that are coarse-textured, sandy to gravelly, highly porous, and largely infertile. In the extreme southeastern part of the state, the Terai soils are mostly rich, clayey loams, mixed to varying degrees with fine sand and humus; they are well suited to the cultivation of rice and sugarcane.

2.1.4 Climate

The stare with its highly varying topographical features, has shown an equally variegating climatic conditions, ranging from hot and sub-humid tropical in the southern tract of Bhabhar to temperate, cold alpine, and glacial climates in the northern part of the high

mountains. Factors such as elevation, slope, proximity of glaciers, forests, mountain peaks and ridges and direction of mountain ranges together give rise to the great variations in climatic conditions, even at the micro and local levels. These attributes determine the temperature range as well as the distribution of rainfall. However, the overall climatic condition in the State is governed by the southwest monsoon. It has a subtropical to temperate climate, with three pronounced seasons; summer, winter, and monsoon. The hilly terrain of the Himalayan region has snow cover and is severely cold during winter with snowfall normally occurring during the months of December to March. The climatic conditions of Almora, Nainital, Pithoragarh, Chamoli, Uttarkashi, Pauri and Dehradun are humid and cold. The year may be divided into four seasons viz. 1) the cold winter season, (December to February), 2) the hot weather season (March to May), 3) southwest monsoon season (June to September) followed by 4) post monsoon season (October to November). Larger part of the state is situated on the southern slopes of the outer Himalayas, monsoon currents can penetrate through trenched valleys, the rainfall reaches its maximal in the monsoon season that spans betweens June to September. Rainfall, spatially, is highly variable depending upon the altitude. In the Lesser Himalayan Zone (1000-3000m amsl) maximum rainfall occurs about 70 to 80% in southern half. August is the rainiest month. Rainfall rapidly decreases after September and it is the least in November. About 55 to 65% rainfall occurs in the northern half in Central Himalayan Zone. About 17% of the annual precipitation occurs in winter season. The winter precipitation is in association with the passage of the western disturbances and is mostly in the form of snowfall, particularly at higher elevations. The precipitation during the premonsoon month, which is about 7% of the annual total and the postmonsoon months, is frequently associated with thunderstorms.

2.1.5 Drainage

The state is drained by various rivers of the Ganges (Ganga) system. The westernmost watershed is formed by the Yamuna River and its major tributary, the Tons. The land to the east of this basin is drained by the Bhagirathi and the Alaknanda, which join to form the Ganges at the town of Devaprayag, and the Mandakini, Pindar, and Dhauliganga, all principal tributaries of the Alaknanda. To the east again are the southward-flowing Ramganga and Kosi Rivers, and draining to the southeast in the same region are the Sarju and Goriganga, both of which join the Kali at Uttarakhand's eastern border with Nepal.

2.1.6 Ambient Air Quality

The pristine environment and sparse population suggest that most part of the State have a very good air quality. Except for the urban cities such as Dehradun, Haridwar, Haldwani, Rishikesh, the ambient air quality has been considered to be moderate to poor. Any point or nonpoint pollution sources of air pollution were not observed. It was observed that the traffic on the roads is too low to cause unbearable air pollution due to vehicular exhaust. There are no industries recorded in or along the subproject area and hence any other source of atmospheric air pollution is not expected.

2.1.7 Water Regime

State of Uttarakhand has a varied hydrogeological setup and can be divided broadly into two distinct hydrogeological regimes viz. the Gangetic alluvial plain and the Himalayan mountain belt. The former is covered with a vast expanse of alluvium and unconsolidated sedimentary material of varying size fractions (ranging from boulder to clay) and is a promising zone for ground water development. The latter zone, being predominantly hilly, offers much less potential for large scale development of ground water. Ground water in the hilly region occurs mostly in fissures/fractures and emerges as springs. The springs are amenable to small scale development of ground water resources in the State. The yield of tube wells in Shiwalik formation ranges from 50.4 m^3/hr to 79.2 m^3/hr, in Bhabar formations yield is upto 332.4 m3/hr. In Tarai belt yield of tubewell ranges 36m^3/hr to 144 m^3/hr and in Indo-Gangetic plains yield varies from 90 m^3/hr to 198 m^3/hr. The main drainage system in Uttarakhand has been grouped into following six catchments.

Yamuna Catchment: The Yamuna River originates from the base of Bandarpunch peak. It has carved a deep V- shaped gorge. Yamuna cuts across the Nag Tibba range and Mussoorie range near a place called Yamuna Bridge. The rivers Tons, Pabar and Aglar are its important tributaries. It passes through the Doon valley on its Western boundary.

Bhagirathi Catchment: This is one of the two rivers which join to form the river Ganga. It originates from the snout of the Gangotri glacier at Gaumukh which is at the base of Chaukhamba peak. Bhagirathi has cut a deep gorge across the granitic rocks of the higher Himalayas of Garhwal. Its main tributaries are the river Janhavi and the Bhilangan.

Alakananda Catchment: This river joins the river Bhagirathi at Devprayag to form the river Ganga. It originates from the eastern slopes of Chaukhamba from the Bhagirathi kharak and Satopanth glaciers. The river flows along the Badrinath temple. Its main tributaries are the Khiraonganga, Pindar Dhauliganga, Birahi, Nandakini, Mandakini etc. It has formed a broad valley at Srinagar (Garhwal).

Mandakini Catchment: It comes out from the Mandakini glacier near Kedarnath. It cuts through a gorge of glacial debris. The river has formed road terraces at Augustmuni and Tilwara. At Tilwara it is joined by the river Lastar Gad. The river Mandakini joins the river Alaknanda at Rudraprayag.

Pinder Catchment: The river Pindar originates from the Pindari Glacier which is located between Nanda Devi and Nanda kot peaks. Sundardhunga river joins the Pindar near Dhakuri. The Pindar joins the river Alaknanda near Karanprayag.

Kali Catchement: The river Kali forms the boundary between Kumaon and Nepal. The Towns of Champawat and Pithoragarh are situated on the back of the Kali River. Its important tributaries are Darma and Saryu rivers.

2.1.8 River Bed Material

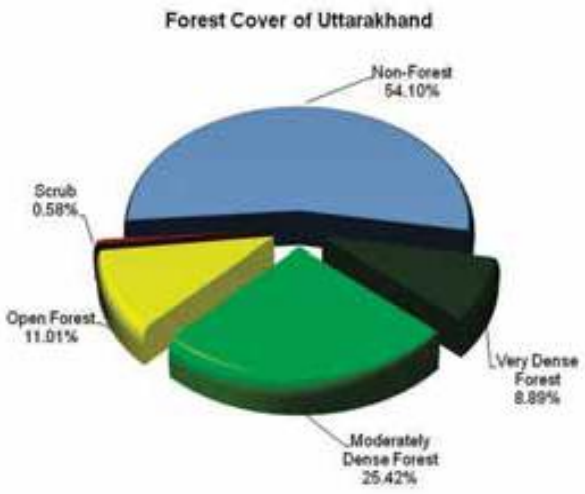
In the Bhabar areas of the State a lot of boulders and sand collects in the rivers after the rains. Collection of this river bed material is an important livelihood option for the locals of the area. The State Forest Department takes due permission from the GoI for the removal of

RBM. The amount of RBM to be removed every year from each river is calculated on technical basis and these areas are then leased out to the Forest Corporation for removal. The Corporation in turn engages local people for removal of RBM. This RBM is then taken to various stone crusher units for grading and sorting purposes. In the year 2006-07 the Forest Corporation earned revenue to the tune of Rs. 4531 lakhs through RBM removal. The main rivers in which RBM removal is done are Gaula, Sharda, Kosi, Dabka, Ganga, Yamuna and Song.

2.1.9 Water Quality

The assessment of water quality reveals the purity of water which is being used for drinking and other domestic purposes. Presently, water scarcity and water pollution are two major concerns for all those associated with water sector. The level of water resources is getting diminished day by day due to uncertainty in arrival of monsoon as well as drying of existing sources in summers. Also less rainfall causes less recharge to ground water and depletion of water bed. Besides, the available water sources get deteriorated by the different natural, human and other activities. Hence, the water quality analysis becomes of prime importance before it is being supplied for human consumption. Due to the lack of proper sewage disposal facilities through pipe lines and sewage treatment plants, faecal waste and domestic waste water is directly disposed off in open sources which deteriorate the water quality. Moreover, in hilly region, lack of sanitation facilities, human and animal excreta are directly mixed in rivers, gadheras and other prominent water sources of domestic supply due to the slope factor and thus, pollute water sources. Water quality is also contaminated by some natural factors. Due to the geological differences, water contaminations in hilly region are more than the other regions because of leaching of variety of minerals of hilly terrains. Due to difference in geochemistry of different regions and flow of rain water to nearby streams/rivers, water contamination gets increased specially in rainy season with cations (Calcium, Magnesium, Sodium, Potssium and Ammonium) and anions (Sulphate, Chloride, Bicarbonares and Nitrate). During important days of bathing and other festival seasons, people come to Prayags, Haridwar, Rishikesh and other important places to take a holy dip in scared rivers and also offer flowers, idols, ashes, curd, ghee and other religious things along with the polythene bags in the river. The organic matters from these items get mixed with water and contaminate the water. The other non-biodegradable materials also flow with water and get settled on the river bed which severely affects the natural replenishment and self purification process of rivers.

There is very little documentation on the pollution status of the rivers in the upper reaches of Himalayas and other small water bodies. In terms of quality, the surface water of the State is unprotected from untreated wastewater, and runoffs from chemical fertilizers and pesticides. No proper sewage treatment facilities exist in the project area. The increasing pollution of water bodies constitutes the biggest threat to public health. At



present, there is limited information available on the quality of fresh water resources in the State. Based on limited records, the water quality of Uttarakhand's rivers, rivulets, and other natural water sources is generally good and no major source of water pollution was found. The hand pumps, natural water seeping out from mountains locally called as Naula, and natural water springs locally called as, Gadhera, represent the ground water sources in the hills. There are no major sources of water pollution in terms of point or non point sources aside from natural landslides leading to deposition of debris in streams.

2.1.10 Forests

According to The India State of Forests report 2015, the recorded forest area of the Uttarakhand state is 34,651 km^2 which constitutes 45.32% of its geographical area. Very-dense forest constitute 8.89%, moderately dense constitutes 25.42%, Open Forest constitutes 11.01% and scrub constitute 0.58% of total forest area. The distribution of forest cover by district is presented in the succeeding Figure and Table. The Garhwal region has more forest cover with 14,498 km^2 compared to the Kumaon region with 9,742 km^2. However, they are almost equal in terms of distribution over its territory with 45% and 47% of covered with forest. The district of Pauri Garhwal, Uttarkashi, Nainital, and Chamoli have the largest forest cover accounting for 50% of all the state's total. Districtwise forest cover has been presented in the succeeding table.

Table 1: Geographic Area and Forest Cover

Region	District	Geographic Area (GA)	Forest Cover			Total Forest	% of GA
			Very Dense	Moderate Dense	Open Forest		
Garhwal	Uttarkashi	8,016	570	1,778	724	3,072	38.32
	Rudraprayag	1,984	241	591	298	1,130	56.96
	Chamoli	8,030	441	1,561	679	2,681	33.39
	Pauri Garhwal	5,329	519	1,954	796	3,269	61.34
	Tehri Garhwal	3,642	296	1,239	621	2,156	59.20
	Dehradun	3,088	620	647	335	1,602	51.88
	Haridwar	2,360	25	301	260	588	24.92
Kumaon	Pithoragarh	7,090	509	1,013	580	2,102	29.65
	Bageshwar	2,246	200	834	329	1,363	60.69
	Almora	3,139	224	929	430	1,583	50.43
	Nainital	4,251	602	1,939	463	3,004	70.67
	Champawat	1,766	348	570	266	1,184	67.04
	Udham Singh Nagar	2,542	157	246	103	506	19.91
Total		53,483	4,754	13,602	5,884	24,240	45.32
Note	Very Dense Forest – All lands with tree cover of canopy density of 70% and above, Moderately Dense Forest – Canopy density between 40%-70%, Open Forest – Canopy density between 10%-40%						

Source: State of Forest Report, 2015

A wide variety of tree species is found in the mountains of Uttarakhand and enumerated in the succeeding table according to altitude location. Some notable tree species are Poplar

(*Populus ciliata*) and Eucalyptus (*Eucalyptus citriodora*) due to their fast growing and large market demands, and Khair (*Acacia catechu*) and Seesam (*Dalbergia sissoo*) for their ecological and economic importance. Sal (*Shorea robusta*), which is highly adapted to sandy soil are being used to stabilize river banks and islands in river beds. Oak (*Quercus* sp.) is another important species considered to be amongst the best wood in the world specially for making agriculture implements due to its very heavy hard with twisted fibers. The State GoU has declared the oak tree (*Quercus* sp.) as a *Kalpvriksha* or wish fulfilling divine tree often treated as the signature plant of the Kumaon Himalayas as numerous logos and insignias with a stylized version of the deodar inscribed on them. Deodar grows in the temperate to alpine climate that is found between 3500 and 12000 feet in this region. Finally Chir pine (*Pinus roxburghii*) a source of resin, which is used for producing resin and terpentine. List of tree species according to altitude has been presented in the table below:

Table 2: Names of Trees

S. No.	Common name	English Name	Botanical Name	Altitude (m)
1	Kachnar	Orchid tree	*Bauhinia variegate*	600-900
2	Cheed	Chir Pine	*Pinus roxburghii*	600-900
3	Shal tree	Shal tree	*Shorea robusta*	600-750
4	Banj	Oak tree	*Quercus incana*	1700-2000
5	Kail	Blue pine	*Pinus wallichiana*	1800-2400
6	Buransh	Rose tree	*Rhododendron arboretum*	200-2100
7	Deodar	Cedar tree	*Cedrus deodara*	1800-2400
8	Raga	Himalayan fir-low level	*Abies pindrow*	2100-2900
10	Raga	Himalayan fir-high level	*Abies spectabilis*	2900-3600
11	Spruce	Spruce	*Picea smithiana*	2400-2900
12	Thuner	Himalayan Yew	*Texus baccata*	2400-2700
13	Surai	Cypress	*Cupressus torulosa*	2300-2400
14	Pangar	House Chestnut	*Aesculus indica*	1800-2100
15		Strawberry tree	*Cornus capitata*	2000-2300
16	Bhojpatra	Betula	*Betula utilis*	3000-3500
17	Buransh	Rose Wood	*Rhododendron arboreum*	1700-2000
18	Simaru	Rose Wood	*R. campanulatum*	2200-3000
19	Moru	Oak tree	*Quercus dilatata*	2000-2500
20	Kharsu/Khoru	Oak tree	*Quercus semicarpifolia*	2200-2400

2.1.11 Biodiversity

The State of Uttarakhand is endowed with rich bio-diversity as manifested by its approximately 64 percent forest cover. The State has established six national parks and six wildlife sanctuaries for the conservation of flora and fauna. Such areas include the Nanda Devi National Park, Valley of Flowers, Gangotri National Park, Govind Pashu Vihar National Park, Rajaji National Park, Jim Corbett National Park, Kedarnath Wildlife Sanctuary, Askot Musk Deer Sanctuary, Mussoorie Sanctuary, Binsar Wildlife Sanctuary,

Sanadi Sanctuary, and Govind Wildlife Sanctuary, all of which are being looked after by GoU. A positive remark on the State is that it maintains rich wildlife even outside the protected areas. Details of ptotected areas in Uttarakhand have been provided in the table below:

Table 3: Protected Areas

S. No.	Protected Areas	Year	Unit	Quantity
1.	**National Parks**			
	(i) Number	2011-12	No.	6
	(ii) Area	2011-12	Sq. Km.	4915
2.	**Wildlife Sanctuaries**			
	(i) Number	2011-12	No.	6
	(ii) Area	2011-12	Sq. Km.	2420
3.	**Important Wild Animals**			
	(i) Tiger	2008	No.	178
	(ii) Leopard	2008	No.	2335
	(iii)Elephant	2008	No.	1346
	(iv) Musk Deer	2008	No.	376
	(v) Black Bear	2008	No.	1935
	vi) Sloth Bear	2008	No.	172
	vii) Brown Bear	2008	No.	14

Source: Wildlife and Protected Areas, ENVIS, 2014

The Himalayas represent one of the most fascinating biota (fauna and flora) all over the world, both in terms of quality and quantity. This is evident from the fact that more than 50 % of all biota can be found only in the Himalayan region. Such fact is brought about by the region's uniqueness in terms of favorable climatic conditions, natural habitats, and soil types. The State of Uttarakhand is represented by Biogeographic Zones 2B Western Himalaya and 7B Siwaliks in this region. About 18.7% of the total area under the Forest Department has been clearly earmarked for biodiversity conservation by the creation and management of 12 Protected Areas (PA) and a biosphere reserve in the State.

Table 4: National Parks

S.No.	National Park	Year of Establishment	Area (sq.km)	District
1.	Corbett NP	1936	521	Nainital and Pauri
2.	Nanda Devi NP	1982	630	Chamoli
3.	Valley of Flower NP	1982	87	Chamoli
4.	Rajaji NP	1983	820	Dehradun and Haridwar
5.	Gangotri NP	1989	2390	Uttarkashi
6.	Govind NP	1990	472	Uttarkashi

Source: Wildlife and Protected Areas, ENVIS, 2002

Table 5: Wildlife Sanctuaries

S.No.	Wildlife Sanctuary	Year of Establishment	Area (sq.km.)	District
1.	Govind WLS	1955	521	Uttarkashi
2.	Kedarnath WLS	1972	957	Chamoli

3.	Askot WLS	1986	600	Pithoragarh
4.	Sonanadi WLS	1987	301	Garhwal
5.	Binsar WLS	1988	46	Almora
6.	Musoorie WLS	1993	11	Dehradun

Source: Wildlife and Protected Areas, ENVIS, 2002

Variations in the topography of high mountain ranges and deep valleys and altitudes from sea-level portions give the project districts different habitats for a variety of fauna and in turn resulted in the enriched biodiversity in the region. The common wildlife reported from the forests includes Tigers, Panthers, Civet Cats, Leopard Cats, Jungle Cats, Himalayan Silver Fox, and the Jackal. Various species of deer including the Musk Deer and the Barking Deer also roam in the districts. Sambhar and Gural as well as the Bear and the Porcupine are also found in the project area. The flying mammal Bat is also common in the area. Other animals in the region include the Chipmunk, the Rhesus Monkey and the Flying Squirrel. Presence of Leopards, Deers, Foxes, and Wild Pigs is also reported. Some important information about wildlife of Uttarakhand is given in the table below:

Table 6: Local and Scientific Names of Trees

S. No.	Local Name	Scientific Name
Trees		
1	Buransh	*Rhododendron arboretum*
2	Deodar	*Cedrus polycarpos*
3	Chir	*Pinus roxburghii*
4	Surai	*Cupressus tourulose*
5	Padam	*Prunus cornuta*
6	Mehal	*Pyrus pashia*
7	Otis	*Alnus nepalensis*
8	Ayar	*Lyonia ovalifolia*
9	Kafal	*Myrica sapida*
10	Akhrot	*Juglana regia*
11	Bhimal	*Grewia optiva*
12	Ritha	*Sapijdus mukorossi*
13	Tun	*Toona ciliate*
14	Nimla	*Ficus auriculata*
15	Timur	*Zanthoxylum tamala*
16	Kharik	*Celtis eriocarpa*
17	Chamkhirik	*Carpinus viminea*
18	Katmon	*Betula alnoides*
19	Kajal	*Acer acuminatum*
20	Katoj	*Castanopsis tribuloides*
21	Kirmola	*Acer oblongum*
22	Kandru	Ilese dipyrene
23	Banj	*Quercus semicarpifolia*
Shrubs		
1	Kala Hisalu	*Rubus lasiocarpus*
2	Karoz	*Carissa spinarium*
3	Kobra Plant	*Arisama helleborifollium*
4	Kandali	*Urtica parviflora*
5	Satavar	*Asparagus racemosus*

6	Dudhi	*Hollerrhena antidysentricr*
7	Bajradanti	*Potentilla fulgens*
8	Banfasa	*Viola surpans*
9	Bach	*Acorus calamus*
10	Nakol	*Urticor dioica*
11	Patyura	*Pteraacanthus angustifrons*
12	Dudhia	*Taraxacum officinale*
13	Vatula	*Flemingia fruticulose*
14	Belmur	*Flacourtia indica*
15	Nirghesi	*Delphinium denudatum*
16	Silfoda	*Bergenia gossypina*
17	Jula	*Gerbera grassypina*
18	Jatamasi	*Nardostachys grandiflora*
Grasses		
1	Dub	*Cynodon dactylon*
2	Kush	*Sucharum spontanour*
3	Gol ringal	*Chimonobambusa falcate*
4	Tachita	*Apluda muticr*
5	Dev ringal	*Thamnocalamus faclouri*
6	Jhugra ringal	*Arundinaria jaunsarensis*

Table 7: Names of Wild Animals

S. No.	Wild Animals		Birds	
	Local Name	**Scientific Name**	**Local Name**	**Scientific Name**
1	Guldar	*Panthera Pardus*	Chir Fijent	Catreus wallichii
2	Kala Bhalu	*Selenarctos thibetanus*	Kalij Fijent	*Lophura Leucomelana*
3	Ghural	*Memorhaedus goral*	Koklaj Fijent	*Pucrassia macrolophus*
4	Kakar	*Muntiacus muntjak*	Kala Irgal	*Letinaetus makavensis*
5	Khirao	*Capricornis sumatraensis*	Karorla	*Urocissa erythsorhyncha*
6	Jangli Suar	*Sus-scrofa cristatus*	Ullu	*Strix aluco nivicola*
7	Chitrola	*Martes flarigula*	Baaj	*Flaco severaus*
8	Langoor	*Presbyits entellus*	Kala Titar	*Francolinus francolinus*
9	Khargosh	*Lepus nigricollis*	Papiha	*Cuculus varius*
10	Sehi	*Hystrix indica*	Tota	*Psittacula humalayana*
11	Gidar	*Canis aureus indicus*	Chakor	*Alectoris graeca chuker*
12	Jangli Billi	*Felis chaus*	Hariyal	*Treron spenura*
13	Gilehri	*Eurambulus pennant*	Pashchimi Tregopan	*Tragopan meloccephalus*
14	Bandar	*Macaques mulatta*	Bulbul	*Pyconotus cafer*
15			Maina	*Aerioctheres tristis*
16			Fakhta	*Streptobelia orientalis meena*
17			Gidh	*Gyps himalayensis*
18			Kauwa	*Carvus macrornynchos*
19			Saat Bahen	*Teyrdoides striatus*
20			Neelkanth	*Garrulus Lanaclatus*

2.1.12 Biosphere Reserves

The Biosphere Reserve is the top category after Wildlife Sanctuary and National Park in the Country. Out of the 14 Biosphere Reserves situated in India, the Nanda Devi Biosphere Reserve (NDBR) established second among the 14 is situated in the State of Uttarakhand. It extends in the three districts of Chamoli (Garhwal), Pithoragarh, and Bageshwar (Kumaon). The Nanda Devi National Park (NDNP) and the Valley of Flowers are UNESCO World Heritage Sites declared in 1988. The NDNP is located in the transition range between the Zanskar range and Himalayan foothills with 97 species of plants including many rare and almost extinct plants like *Saussurea sudhanshui*, N*ardostachys grandiflora*, *Picrorhiza kurroa*, *Cypripedium elegans*, *C. himalaicum*, *Dioscorea deltoidea* and *Allium stracheyi*. There are also 83 animal species including the Bharal (*Pseudois nayaur*), Himalayan Musk Deer (*Moschus chrysogaster*), Mainland Serow (*Capricornis sumatraensis*), Himalayan Tahr (*Hemitragus jemlahicus*), Goral (*Nemorhaedus goral*), Snow Leopard (*Panthera uncia*), Common Leopard (*Panthera pardus*), Himalayan Black Bear (Selenarctos thibetanus), Common Langur (Presbytis entellus), and Rhesus Macaque (*Macaca mullata*). Also, there are about 114 avian species and 27 species of butterflies in the NDNP.

The Rajaji National Park was established in 1983 protecting sections of the tropical deciduous forest area of the Shivalik Hill range on the Himalayan foothills. The Park covers 820.42 sq. km. along the Haridwar, Dehradun and Pauri Garhwal. The park has a vast Sal forest, and mixed forest mostly covered with *Acacia catechu* and *Vetiveria zizanioides*. It is refuge to approximately 49 species of mammals, 315 species of birds, 49 species of reptiles, 10 species of amphibians and 49 of Piscean species. This park has the largest population of elephants in Uttarakhand and a large population of tigers and leopards. Noteable animals seen in the park are the Wild Cat, Goral, Rhesus Macaque, Himalayan Yellow Throated Marten, Monitor, Lizard, Indian Hare, Sloth, Himalayan Black Bear, King Cobra, Jackal, Barking Deer, Sambar, Wild boar, Indian Langur, Indian Porcupine and Pythons. The population of birds consists of the Great Pied Hornbill, Himalayan Pied Kingfisher, Sparrows, Fire Tailed Sunbird and the Peacock (Indian National Bird).

The Jim Corbett National Park covers 520 sq. km. of Savannah type grasslands and Sal forests. Declared as a Tiger Reserve in 1973, the Park has a rich diversity including the White Tiger, Throated Martem, Himalayan Palm Civet, Indian Grey Mongoose, Para, Kakka, Ghoral, Bar-headed Goose, Duck, Grepe, Snipe, Turtles, Python, Common Otter, Porcupine, Clack-taped Hare, Chital, Spotted Deer, Viper, Cobra, Krait, King Cobra, Tortoise, Graylag, Sandpiper, Gull, Cormorants and Egrets. There are 488 species of flora found protected in the Park including Sal, Savannah Grass, Anogeissus- *Acacia catechu* forests, *Mallotus philippensis*, Jamun and *Diospyros tomentosa*.

The Govind National Park covers an area of 957 sq. km. in Uttarakashi and a sanctuary for the endangered Snow Leopard and some other 15 species of mammals and 150 species of birds that includes the Himalayan Black bear, Brown bear, Musk deer, Bharal, Himalayan Tahr, Serow and Common leopard. The endangered birds found in this region are Monal Pheasant, Koklas Pheasant, Bearded Vulture Himalayan Snow Cock, Golden Eagle, Western Tragopan, Steppe Eagle and Black Eagle. Other varieties of birds include Owls, Pigeons, Minivets, Thrush, Warblers, Bulbul, Cuckoo and Finches.

The Valley of Flowers is a World Heritage Site located in Chamoli. There are hundreds of species mostly being Orchids, Poppies, Primula, Calendulas, Iris, Lily, Roses, Violets, Rhododendron, Angelica, Himalayan Fritillary, Daisies and Anemones and also supports a variety of mammals like the Himalayan Tahr, Snow Leopard, Musk Deer, Red Fox, Common Langur (a type of monkey), Bharal, Serow, Himalayan Black Bear, Himalayan Brown Bear, Pica (Mouse hare). A huge variety of butterflies and birds are also found in the valley including Himalayan Golden Eagle, Griffon Vulture, Snow Partridge, Himalayan Snow Cock, Himalayan Monal, Snow Pigeon, and Sparrow Hawk.

2.1.13 Landuse and Landuse Pattern

The land use pattern of Uttarakhand is strongly governed by the following: elevation, climate, mountainous terrain, lithological type, topography, surface hydrology, sunlight in the fields of forestry and agriculture, alpine meadows, sparse vegetation (scrub), grazing land, barren land, and human settlement. The human settlements are mainly located in the shallow water zones or around the localities nearer to springs. Forest is the main land use in the State and nearly 64 % of the geographical area is under the varying forest densities (cover). Tree line is clearly demarcated above 2900 m elevation. Agriculture is confined to areas of low reliefs which are underlined by weak rock formation (i.e. schists, phyllites, weathered gneisses, and crushed quartzite). The cultivated land, approximately 11.5 % of the total geographical area, is either terraced/semi-terraced or plain. Other land use categories such as meadows, grazing lands, and scrubs do not exhibit definite relationship with lithology. It is also observed that the south-facing hill slopes are covered by lush green forests.

Table 8: Land Use

S. No.	Land-use	Period /Year	Unit	Statistics
1.	Total Reported Area	2010-11	Hectare	5,672636
2.	Forest Area	2010-11	Hectare	3484803
3.	Culturable Waste Land	2010-11	Hectare	310390
4.	Fallow Land	2010-11	Hectare	127793
	(i) Current Fallow	2010-11	Hectare	43295
	(ii) Fallow Land other than Current Fallow	2010-11	Hectare	84498
5.	Barren & Uncultivable Land	2010-11	Hectare	224764
6.	Land under Non-agricultural Uses	2010-11	Hectare	217648
7.	Permanent Pasture & Other Grazing Land	2010-11	Hectare	198526
8.	Land under Misc., Tree Crops and Groves not included in Net Area Sown	2010-11	Hectare	385548
9.	Net Area Sown	2010-11	Hectare	723164

Source: Uttarakhand at a Glance 2012-13, Govt. of Directorate of Economics and Statistics

2.1.14 Agriculture

Agriculture is the main economic activity in the State as per latest land-use statistics. The total reported area for agricultural activity is 55.66 lakh ha. In the hills, the major crops grown include wheat, paddy, mandua, ramdana and potato whereas in the plains the major crops are wheat, paddy, pulses, and sugarcane.

The pattern of land ownership is unlike that found in the rest of India. Most of the Uttarakhand farmers are owner-cultivators. Tenant farming and sharecropping are rare while landholdings are generally small and limited to family farms' approximately 50 percent of all landholdings are less than 0.5 hectares in size and 50 percent under one hectare. As such, the zamindari system of big landholders is limited to the plains. Both the geography and the Pahari cultural heritage have played roles in maintaining a traditionally more equitable, if impoverished, land distribution in Uttarakhand. Agriculture in Uttarakhand is very complex and is interlinked with crop husbandry, animal husbandry and forestry to form a production system. Like all India scenario, proportion of workers was the highest in agriculture followed by other workers and household industry workers. Contribution of agriculture to the Net State Domestic Product (NSDP) during the year 2001-02 was about 30 percent and its share showed a continuous decline having a percentage of 24.89 (2004-05), 17.80 (2009-10), 14.97 (2011-12), 14.71 (2012-2013) and 14.73 (2013-2014). Agriculture in the State is characterized by the following:

i. Out of 7.93 lakh hectare of agriculture land, hilly region covers 56.8 percent and plain region covers 43.2 percent.
ii. Both rain-fed and irrigated agriculture is practised in the State. Cereals are emphasised in the irrigated agriculture and two crops are taken in an agriculture year. In the rain-fed system millets, pulses and tuber crops are grown.
iii. Monocropping is a common practice in the irrigated areas whereas mixed cropping is common in rainfed areas.
iv. 85 percent of the gross cultivated area is used only for growing food grains where value addition is low.

In the mountain regions and the Himalayan agriculture specifically, farmers deviate substantially from the kinds practiced in less precipitous altitudes. Hill farmers have adapted to the difficult geography, and the terrain has likewise influenced cultural modes in mountain societies. Patterns of land ownership, subsistence versus surplus production, and level of market penetration have also been decisively affected. However, traditional Himalayan agricultural systems and knowledge-base are being steadily eroded by market pressures, bringing both economic and cultural changes in Uttarakhand. Age-old self-reliance has given way to dependency on imports from the productive plains that bear pesticide/chemical fertilizer-enhanced yields. Cultural domination from the plains also

threatens Uttarakhand's traditional foods as an increasing taste for mill-polished rice is outcompeting mountain crops.

Agriculture is also practiced in the river valleys of Uttarakhand on a small 10 to 15 percent of the total land area. Over hundreds of years, many of the slopes have been cut into field terraces, a common characteristic of mountain agriculture throughout the world. The region's farmers have also developed advanced manure, crop rotation, and intercropping systems. Most of the land on hilly slopes is non-irrigated.

Table 9: Area under Prinicipal Crops

Crops	Year/ Period	Unit	Quantity
Area Under Principal Crops			
Cereals	2011-12	Hectare	896774
(i) Rice	2011-12	Hectare	280108
(ii) Wheat (*Triticum aestivum*)	2011-12	Hectare	369209
(iii) Barley (*Hordeum vulgare*)	2011-12	Hectare	22508
(iv) Maize (*Zea mays*)	2011-12	Hectare	28038
(v) Finger millet (*Eleusine coracana*)	2011-12	Hectare	125163
(vi) Sanwan	2011-12	Hectare	63002
(vii)Other	2011-12	Hectare	8746
Pulses	2011-12	Hectare	55690
(i) Urad (*Phaseolus radiatus*)	2011-12	Hectare	12980
(ii) Lentil (*Lens esculenta*)	2011-12	Hectare	12295
(iii) Pea (*Pisum sativum*)	2011-12	Hectare	3451
(iv) Gahat (*Mycrotoma biflorum*)	2011-12	Hectare	12033
(v) Rajma (*Dolichos lablab*)	2011-12	Hectare	4614
(vi) Gram			766
(vii) Bhatt (Black Soyabeen)	2011-12	Hectare	5734
(viii) Others	2011-12	Hectare	3817
Oil Seeds	2011-12	Hectare	29705
(i) Mustard (*Brassica compestris*)	2011-12	Hectare	14294
(ii) Seasmum (*Sesamun indicum*)	2011-12	Hectare	2020
(iii) Groundnut (*Arechis hypogea*)	2011-12	Hectare	1112
(iv) Soyabean (*Glycin max*)	2011-12	Hectare	12279
Other Crops	2011-12		
(i) Sugarcane (*Saccharum officinarum*)	2011-12	Hectare	108255
(ii) Onion (*Allium cepa*)	2011-12	Hectare	2353
Agriculture Productivity			
Cereals	2011-12	Qtl./Hectare	22.03
(i) Rice	2011-12	Qtl./Hectare	21.20
(ii) Wheat (*Triticum aestivum*)	2011-12	Qtl./Hectare	23.80
(iii) Barley (*Hordeum vulgare*)	2011-12	Qtl./Hectare	12.64
(iv) Maize (*Zea mays*)	2011-12	Qtl./Hectare	14.66
(v) Finger millet (*Eleusine coracana*)	2011-12	Qtl./Hectare	13.92
Pulses	2011-12	Qtl./Hectare	8.15
(i) Urad (*Phaseolus radiatus*)	2011-12	Qtl./Hectare	8.13
(ii) Lentil (*Lens esculenta*)	2011-12	Qtl./Hectare	8.19
(iii) Pea (*Pisum sativum*)	2011-12	Qtl./Hectare	9.54
(iv) Gahat (*Mycrotoma biflorum*)	2011-12	Qtl./Hectare	8.04

(v) Rajma (*Dolichos lablab*)	2011-12	Qtl./Hectare	10.27
(vi) Gram		Qtl./Hectare	7.85
(vii) Bhatt (Black Soyabeen)	2011-12	Qtl./Hectare	9.83
Oil Seeds	2011-12	Qtl./Hectare	8.34
(i) Mustard (*Brassica compestris*)	2011-12	Qtl./Hectare	8.00
(ii) Seasmum (*Sesamun indicum*)	2011-12	Qtl./Hectare	2.26
(iii) Groundnut (*Arechis hypogea*)	2011-12	Qtl./Hectare	12.72
(iv) Soyabean (*Glycin max*)	2011-12	Qtl./Hectare	14.46
Other Crops	2011-12	Qtl./Hectare	
(i) Sugarcane (*Saccharum officinarum*)	2011-12	Qtl./Hectare	609.33
(ii) Onion (*Allium cepa*)	2011-12	Qtl./Hectare	55.69

Table 10: Ecological Regions and Major Agricultural Crops

S. No.	Ecological Sub-Region	Altitudinal Gradient (m)	Major Agriculture Crops
1	Lower Dun, Terai	300 - 600	Wheat (*Triticum aestivum*), Paddy (*Oryza sativa*) and Sugarcane (*Sachharum officinarum*).
2	UpperDun, Bhabar, lower Shivaliks	600 - 1,200	Wheat (*Triticum aestivum*), Paddy (*Oryza sativa*), Maize (*Zea mays*) Chaulai (*Amaranthus* species) Finger millet/ Mandua (*Eleusine coracana*) and Barnyard millet (*Echinochloa frumentesia*)
3	Middle Garhwal and Kumaon	1,200 - 1,800	Wheat (*Triticum aestivum*), Paddy (*Oryza sativa*), Cheena (*Panicum miliaceum*), Potato (*Solanum tuberosum*), Barley (*Hordeum vulgare*), Finger millet (*Eleusine coracana*) and Barnyard millet (*Echinochloa frumentesia*),
4	Upper Garhwal and Kumaon	1,800 - 2,400	Wheat (*Triticum aestivum*) Barley (*Hordeum vulgare*) Potato (*Solanum tuberosum*), Chaulai (*Amaranthus* species), Cheena (*Panicum miliaceum*) and Phaphra (*Fagopyum tataricum*)
5	Cold Zone	2,400 - 3,600	Summer Crops: Wheat (*Triticum aestivum*), Barley (*Hordeum vulgare*) Potato (*Solanum tuberosum*), Phaphra (*Fagopyum tataricum*) Chaulai (*Amaranthus* species), Kauni (*Setaria etalica*) Ogal (*Fagopyrum esculentum*) and Uva Jau (*Hoycleum himalayanse*)

Various pulses (*e.g.,* Masur (*Ervum lens),* Kulat (*Mycrotoma biflorus)*) are grown intercropped during the two harvest seasons early winter after the rainy season during which millet is grown, and midsummer before the hot dry season during which barley and wheat are grwon. Dry and wet rice, taro, pumpkins, beans, corn, ginger, chili, cucumbers, leafy

vegetables, and tobacco are also grown in the area. Likewise, potatoes have become an important cash crop being grown in areas unsuitable for other plants. The irrigation facility is only available adjoining to rivers in valleys. The irrigation and drainage system in Uttarakhand is described below.

Table 11: Mode of Irrigation and Drainage

Mode of Irrigation and Drainage System in Uttarakhand				
S. No.	**Items**	**Year/ Period**	**Unit**	**Quantity**
	Net and Gross Irrigated Area			
1	Canals	2011-12	Hectare	83687
2	Tube Wells	2011-12	Hectare	216100
3	Other Wells	2011-12	Hectare	11519
4	Tanks/ Ponds	2011-12	Hectare	83
5	Other Sources	2011-12	Hectare	24747
6	Net Irrigated Area (NIA)	2011-12	Hectare	336136
7	Gross Irrigated Area (GIA)	2011-12	Hectare	561733
	Irrigational Infrastructure			
1	Length of Canals	2011-12	Km.	11588
2	Length of Lift Canals	2011-12	Km.	242
3	Tube Wells (State)	2011-12	No.	1110
4	Pump Sets (Boring/ Free Boaring)	2011-12	No.	54642
5	*Hauj*	2011-12	No.	32850
6	*Gool*	2011-12	Km.	26365
7	Hydrum	2011-12	No.	1547
8	C.C.A. Under State Canal	2011-12	Lakh Hect.	3.302
9	Revenue Collection by Irrigation	2011-12	Rs. Lakh	252.27

2.1.15 Fisheries

The State has great potential for the development of fisheries. The State abounds in perennial and seasonal water bodies which hold high promise for the growth of fisheries. Golden Mahseer (*Tor putitora*), one of the main game and food fish in the central Himalayan region, has decreased significantly. The fish migrate considerable distances upstream in search of suitable spawning grounds. Stocks of the Himalayan mahseer are depleted and it is now considered an endangered species. Catch data from the major rivers are not available while studies are characterized as sporadic and preliminary in nature. According to available statistics, the Himalayan mahseer contributes significantly only in one river comprising 32.8% of the catch from the Nayar River, 9.7% from Song River, and 0.83.1% from other rivers. The important fishes commonly found in the Himalayan river basins are *Catla catla*, *Labeo rohita*, *Labeio calbase*, *Cirrihinus mirigale*, Clarius, batrachus, *Rita rita*, *Heteropneuptus fonilis*, *Notopterus nontopterus*, *N. Chitala*, *Macrobrachum rosenbergii*, *M. malconsoni*, *M. Chapral*, *Channa punetatus*, *C. gaehua*, and *C. striatus*.

2.2 Socio-Demographic Profile

According 2011 Census, Uttarakhand's population has is around 10.1 million, with last decadal growth being 19.17. Uttarakhand feeds approximately 0.84% of India's total population. Out of the total population, males account for 5,154,178 and females account for

4,962,574, persons. Sex Ratio in the state is 963 that was 962 in 2001 census and fares better as compared to average sex ratio of India (940) but the child sex ratio of 886 in Uttrakhand remains a matter of concern.

Literacy rate in the state is 79.63% that above the national average of 74.04%. Total 6,997,433 people were found literate in Uttarakhand during the last Census, out of the total literate population, 3,930,174 were males (88.33%) while remaining 3,067,259 were female (70.70%). These averages of literacy in overall and among male and female have increased since Census 2001 when the male and female literacy rates were recorded as 81.02% and 63.36% respectively.

The population of the districts in Uttarakhand varies considerably. Four of the 13 districts, namely Dehradun, Haridwar, Udham Singh Nagar and Nainital account for 61.5 % of the state's total population. On adding Tehri Garhwal, Pauri Garhwal and Almora, this accounts for nearly 81%. This clearly shows that the concentration of population is quite high in the mid and foothills as compared to the remaining six districts of high hills.

District-wise, there are variations in the density of population with Haridwar, Udham Singh Nagar and Dehradun have higher densities of 817, 648, and 550 persons per square km respectively; while in districts like Uttarkashi, Chamoli and Pithoragarh the population density is quite low with average of 41, 49, and 69 persons per square km. The population density in the other two project districts, Bageshwar and Rudraprayag is 116 and 122 persons per square km respectively.

Table 12: Demograhic Indicators

S.No.	Characteristics	Number/ Percentage
1	Geographic Area (in Sq. kms)	53,484 sq. kms
2	Number of blocks	95
3	Number of villages	16826
4	Number of towns	75
5	Total Population (2011) Male Female	1,01,16,752 5,154,178 4,962,574
6	Population Sex Ratio	963
7	Child Sex Ratio	886
8	Decadal growth rate	19.17
9	Density- per sq. km.	189
10	Literacy Rate Male Female	79.63% 88.33% 70.70%
11	% SC/ST population SC ST	 15.17 2.56

Table 13: SC and ST Population Details											
S. No.	District	Population			SC Population			ST Population			
		Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	% of Total
		305781	24305	330086	76875	3692	80567	3374	138	3512	1.06
2	Chamoli	332209	59396	391605	68000	11317	79317	9046	3214	12260	3.13
3	Rudraprayag	232360	9925	242285	46279	1400	47679	309	77	386	0.16
4	Tehri Garhwal	548792	70139	618931	94628	7502	102130	630	245	875	0.14
5	Dehradun	754753	941941	1696694	119123	109778	228901	101475	10188	111663	6.58
6	Garhwal	574568	112703	687271	109576	12785	122361	1952	263	2215	0.32
7	Pithoragarh	413834	69605	483439	109541	10837	120378	15915	3620	19535	4.04
8	Bageshwar	250819	9079	259898	69842	2219	72061	1874	108	1982	0.76
9	Almora	560192	62314	622506	140931	10064	150995	750	531	1281	0.21
10	Champawat	221305	38343	259648	41725	5658	47383	1084	255	1339	0.52
11	Nainital	582871	371734	954605	137906	53300	191206	5780	1715	7495	0.79
12	Udham Singh Nagar	1062142	586760	1648902	174919	63345	238264	117381	5656	123037	7.46
13	Hardwar	1197328	693094	1890422	307320	103954	411274	5249	1074	6323	0.33
Total		**7036954**	**3049338**	**10086292**	**1496665**	**395851**	**1892516**	**264819**	**27084**	**291903**	2.89

Uttarakhand is a predominantly rural state with 16,826 rural settlements, of which 12,699 or 81% have a population of less than 500. In most of the districts, more than 75-85 % of rural settlements have a population of less than 500. Only 17 % of the rural settlements have a population ranging between 500-1999 and the villages with population of 2000 or more are few (2.7 %). The small size of settlements and their widespread distribution is a formidable challenge for service delivery in the state of Uttarakhand with such a high percentage of small and scattered hamlets in tough geographic and climatic conditions.

2.2.1 Livelihoods

The work force engaged in agricultural activities is 58.39 percent of total work force. The share of female work force in total work force is 36.31 percent. The occupational distribution (2001 census) indicates that the share of cultivators was predominant in occupational structure. The occupational structure of main and marginal workers Main workers are those workers who had worked for the major part of the reference period i.e., six months or more are termed as main workers. Marginal workers are those workers who had not worked for the major part of the reference period i.e, less than six months are termed as marginal workers.

The proportion of marginal workers is 1/4th of total work force and a higher proportion of marginal workers are engaged in agriculture sector. It indicates that development programs should be devised in such a manner so that adequate employment opportunities on sustainable basis are provided to the marginal workers. It would help in reduction of poverty level as also arresting in migration of labour force from rural to urban area.

Table 14: District wise details of main and marginal workers

District	Main Workers	Marginal workers	Total Workers	%age of marginal workers to total workers
Uttararakashi	114842	21062	135904	15.50
Chamoli	96900	67829	164729	41.18
Tehri Garhwal	181205	83510	264715	31.55
Dehradun	336504	63971	400475	15.97
Pauri Garhwal	171647	98224	269871	36.40
Rudraprayaga	76068	25965	102033	25.45
Haridwar	353556	71707	425263	16.86
Pithoragarh	124062	74647	198709	37.57
Almora	204649	87533	292182	29.96
Nainital	220995	57952	278947	20.78
US Nagar	300141	92015	392156	23.46
Bageshwar	85613	33231	118844	27.96
Champawat	56165	34043	90208	37.74
Total	**2322347**	**811689**	**3134036**	**25.90**

The district which are having high proportion of marginal workers than State average(25.90%) are Chamoli, Tehri Garhwal, Pauir Garhwal, Almora, Pithoragarh, Bageshwarand Champawat which indicates that employment opportunities on sustainable basis needs to be generated in these districts particularly under wage employment. In addition to this, the number of unemployed persons registered was 4.14 lakh (2005-06).

Table 15: Classification of Workers and Its Percentage to Total Workforce

Numbers in Lakhs					
Type of workers	**Main workers**	**Marginal workers**	**Total**	**Male**	**Female**
Cultivators	10.67 (34.0)	2.03 (16.1)	15.7 (5.01)	6.84 (21.8)	8.86(28.3)
Agricultural laborers	1.43(4.6)	1.17(3.7)	2.6(8.3)	1.90(6.1)	0.69(2.2)
Household Industry	0.49(1.6)	0.23(0.7)	0.72(2.3)	0.44(1.4)	0.29(0.9)
Others	10.63(33.9)	1.69(5.4)	12.32(39.3)	10.78(34.4)	1.54(4.9)
Total	23.22(74.1)	8.12(25.9)	31.34(100)	19.96(63.7)	11.98(36.3)

2.2.2 Land Use

Like most other hill economies, the people of Uttarakhand practice integrated systems of farming, forestry, horticulture, livestock and off-farm activities. The recorded forest area constitutes 64.79% of the total reported area, though the actual cover based on remote sensing and satellite imagery information is only 44 percent. The net sown area for the region is a little over 13% of the total reported area, although there are wide variations in this percentage from district to district. About 33% of the total area in Uttarakhand is either rocky/ snow covered/ glaciated or otherwise unproductive and degraded land. About 12% of agricultural land has got irrigation and about 90% land is used for growing cereals, fodder (berseem) and some vegetables. Nearly 30% of the geographical area of the State has been

classified into various types of degraded land, while 53% of the area falls in the category of severe and very severe soil erosion. The land use pattern of the state is given below:

Table 16: Land Use

Land Use	Area in '000 Ha	Percentage
Total geographical area	5,348	
Reporting Area for land utilization	5,673	100.00
Forests	3,486	61.45
Not available for land cultivation	441	7.77
Permanent pastures and other grazing lands	199	3.51
Land under miscellaneous trees crops and groves	384	6.77
Culturable wasteland	303	5.34
Fallow lands other than current fallows	71	1.25
Current fallows	35	0.62
Net area sown	754	13.29

2.2.3 Industries

Directorate of industries is the State level office responsible for implementing the policies and programmes for Industrial Development in the State. The main aim of Directorate of Industries is to provide a comprehensive framework to enable a facilitating, investor environment for ensuring rapid and sustainable industrial development in Uttarakhand and through this to generate additional employment opportunities and to bring about a significant increase in the State Domestic Product, eventually widening the resource base of the State.

Table 17: Type of Industries

Type of Industry	Number
Khadi Udyog	859
Small Scale Industries	40049
No.of Factories	2739

3. Laws and Regulations - Environment and Social

3.1 Introduction

This chapter deals with the laws, regulations and policies, of Government of India, Government of Uttarakhand and the World Bank, related to environment and social issues. Only the laws, regulations and policies relevant to the project are discussed here. This sections needs to be updated as when new laws, regulations and policies are made and enforced or the existing ones are revised.

3.2 Operational Policies and Directive of The World Bank

The relevant and applicable safeguards policies of the World Bank are also reviewed. The below table describes the relevant safe guard policies of the World Bank and discusses their applicability to the project.

Table 18: Operational Policy and Directives of World Bank

Policy	Key Features	Applicability to this project
OP/BP 4.01 Environmental Assessment	Potential environmental consequences of projects identified early in project cycle. EAs and mitigation plans required for projects with significant environmental impacts or involuntary resettlement. EAs should include analysis of alternative designs and sites, or consideration of "no option" Requires public participation and information disclosure before Board approval.	**Applicable.** Specific interventions envisaged under the project such as those for Public Buildings (SDRF Training Facility), Bridges, Slope Protecton and River Bank Protection may have some potential adverse environmental impacts in their area of influence. Such impacts will depend upon the location, nature and magnitude of interventions - there will be clarity on this once the said details are known and the results from the environment screening process are available. OP 4.01 has been triggered to ensure that such investments are planned and designed to be sound and sustainable by integrating environmental dimensions into the over-all decision making process. Identification of any potential impacts and mitigation/ enhancement measures to address likely impacts is proposed.

Policy	Key Features	Applicability to this project
OP/BP 4.04 Natural Habitats	Prohibits financing of projects involving "significant conversion of natural habitats unless there are no feasible alternatives". Requires environmental cost benefit analysis. Requires EA with mitigation measures.	**Applicable.** The proposed activities such as Public Buildings (SDRF Training Facility), Bridges, Slope Protecton and River Bank Protection could have impacts natural habitats, flora fauna and the local natural ecosystem. To mitigate such impacts, assessment procedures and mitigation measures have been put into place through the ESMF so that any likely negative impacts on the natural environment are minimized. After the screening results are available, the safeguard policy trigger on natural habitats will be ascertained, particularly in context of proposed activities such as Public Buildings (SDRF Training Facility), Bridges, Slope Protecton and River Bank Protection. While impacts on critical natural habitats are not envisaged based on currently available information, the safeguard related studies will determine if such an issue is likely to arise on account of a such specific sub-project interventions.
OP/BP 4.36 Forestry	Prohibits financing for commercial logging operations or acquisition of equipment for use in primary moist tropical forests.	**Applicable.** No commercial logging is to be supported under the project. However, some activities under the project can have impacts on the health of forests. Some works such as Public Buildings (SDRF Training Facility), Bridges, Slope Protecton and River Bank Protection may require going into Forest areas and therefore affect forests. Also in the case of change of bridge locations this remains a possibility.

Policy	Key Features	Applicability to this project
OP 4.09 Pest Management	Supports environmentally sound pest management, including integrated pest management, but does not prohibit the use of highly hazardous pesticides. Pest management is the borrower's responsibility in the context of a project's EA.	**Not Applicable** Project is not financing any activities related to agriculture or horticulture or procurement of any pesticides.
OP/BP 4.12 Involuntary Resettlement	Implemented in projects which displace people. Requires public participation in resettlement planning as part of SA for project. identification of "those who have formal legal rights to land (including customary and traditional rights recognized under the laws of the country. Intended to restore or improve income earning capacity of displaced populations in addition to their resettlement. Intended to provide compensation for lost assets and other resettlement assistance to "those who have no recognizable legal right or claim to the land they are occupying.	**Applicable.** Some project interventions are likely to trigger issues such as those related to land acquisition, loss of assets and impact on livelihood sources. Identification of any potential impacts and mitigation measures to address likely impacts is proposed. Transfer of Government land under different tenure systems could trigger adverse impacts such as loss of access to natural resources – firewood, fodder, water etc and loss of sources of income/ livelihood/ shelter/ homestead.
OP/BP 4.10 Indigenous Peoples	Purpose is to ensure indigenous peoples benefit from Bank financed development and to avoid or mitigate adverse effects on indigenous peoples. Applies to projects that might adversely affect indigenous peoples or when they are targeted beneficiaries. Requires participation of indigenous peoples in creation of "indigenous peoples development plans".	**Not Applicable.** The project is not dealing with forests or livelihoods, because of this it was considered as not triggered. However, STs, if present among the PAPs, are given certain special privileges; they are considered as vulnerable and they will be given preference in selection for any individual benefits under the project. In case if any ST population is affected, then it would trigger Bank's policy on Indigenous Peoples.
OP/BP 4.11 Physical Cultural Resources	Purpose is to assist in the preservation of cultural property, such as sites having archeological, paleontological, historical, religious and unique cultural values. Generally seeks to assist in their preservation and avoid their elimination. Discourages financing of projects that will damage cultural property.	**Applicable.** A few project interventions may be located close to sites, structures, natural/man-made features that have historical, archeological, religious or other cultural significance. Through screening and EA/SA process, the project's potential impacts on physical cultural resources will be

Policy	Key Features	Applicability to this project
		determined and management measures, as required will be taken and integrated into the sub-project cycle. The ESMF also provides procedures to deal with chance finds during the sub-project implementation.
OP/BP 4.37 Safety of Dams	Applies to large dams (15 meters or more in height). Requires review by independent experts throughout project cycle. Requires preparation of EA and detailed plans for construction and operation, and periodic inspection by the Bank.	**Not Applicable.**
OP/BP 7.50 Projects on International Waterways	Covers riparian waterways that form boundary between two or more states, as well as any bay, gulf, strait or channel bordered by two or more states. Applies to dams, irrigation, flood control, navigation, water, sewage and industrial projects. Requires notification, agreement between states, detailed maps, feasibility surveys.	**Not Applicable.** None of the proposed sub-projects are crossing international boundaries.
OP/BP 7.60 Projects in Disputed Areas	Applies to projects where there are territorial disputes present. Allows Bank to proceed if governments agree to go forward without prejudice to claims. Requires early identification of territorial disputes and descriptions in all Bank documentation.	**Not Applicable.**

Other World Bank Policies important to Environmental Concerns is the BP 17.50. This policy deals with Disclosure of Operational Information. The Bank's Policy on Disclosure of Information, has been incorporated in the project implementation plan.

3.3 Policy and Regulatory Framework of GoI and GoU

This deals with various policies, acts, rules and regulations promulgated by the central and state governments related to environment and relevant to present project.

3.4 Environmental Regulation

Scope of relevant environment regulations and implications for the ESMF are furnished in the table below.

Table 19: Environmental Regulations

S.No.	Relevant Act	Scope of the Act	Implication for the EMF
1	The Environment (Protection) Act No.29 of 1986	▪ Under this Act, the central government is empowered to take measures necessary to protect and improve the quality of the environment by setting standards for emissions and discharges; regulating the location of industries; management of hazardous wastes, and protection of public health and welfare. ▪ This encompasses all legislations providing for the protection of environment in the country. ▪ It includes the power to direct the closure, prohibition or regulation of any industry, operation or process by the government	▪ Relevant to sub-projects to be taken up, viz., Public Buildings (SDRF Training Facility), Bridges, Slope Protecton and River Bank Protection, etc. activities ▪ Preservation of air and water quality ▪ Control dust pollution due to quarrying, which might harm the vegetation
2	Water and Air (Prevention and Control of Pollution) Act, 1974 & 1981 (Central Act 6 of 1974) as amended in1988	▪ This Act prohibits the discharge of pollutants into water bodies beyond a given standard and lays down penalties for noncompliance. ▪ Water act includes the maintenance or restoring the wholesomeness of the water ▪ Air act restricts the operation of any industrial plant in an air pollution control area without a valid consent	▪ Generally not relevant to project activities. ▪ Relevant to hot mix/ batching plants/ stone crushers which might be established for executing sub-projects.
3	Forest (Conservation) Act No. 69 of 1980 and amended in 1988	▪ This Act restricts the powers of the state in respect of de-reservation of forests and use of forestland for non-forest purposes. ▪ All diversions of forestlands to any non- forest purpose, even if the area is privately owned, require approval of the central government ▪ Leases of forest land to any organization or individual require approval of the central government ▪ Proposals for diversion of forest land for construction of dwelling houses are not to be entertained	▪ Generally not relevant to project activities ▪ Permission is to be obtained from the Forest Department when forest land is required for the project activities.
4	National Forest Policy, 1988	▪ Protect and enhance the yields of non-timber forest products in order to generate employment and income for forest and village communities	▪ Generally not relevant to project activities. ▪ Relevant if employment generation for resettlement and rehabilitation are taken

S.No.	Relevant Act	Scope of the Act	Implication for the EMF
			up in villages near forests.
5	Joint Forest Management, 1993	▪ Induces people participation in forest management sharing mechanism to distribute the benefits of interventions carried out on common resources property, government lands, wastelands, etc. ▪ Benefits are categorized into two – ecological benefits and economic benefits. ▪ If land under JFM/ Van Panchayas is transferred for project purposes, then such beneficiaries could be affected. Hence the land need to be categorized and the pattern of use recorded for mitigation.	▪ Not relevant to project activities. ▪ Relevant if employment generation for resettlement and rehabilitation are taken up in villages near forests.
6	The Wildlife (Protection) Act I972, Amendment 1991	▪ This Act provides for protection to listed species of Flora and Fauna in the declared network of ecologically important protected areas such as wild life sanctuaries and national parks. ▪ The wildlife protection act has allowed the government to establish a number of national Parks and Sanctuaries, over the past 25 years, to protect and conserve the flora and fauna of the state	▪ Not relevant to project activities. ▪ Preserve Biodiversity ▪ Ecologically sensitive areas, wild life sanctuaries and national parks should be avoided while selecting sites for project components. If this is not possible, permission should be obtained from the Forest Department and appropriate safeguards must be adopted.
7	EIA Notification of MoEF 2006	▪ All projects listed under Schedule-I of the Notification require environmental clearance from the MoEF. The list of project categories under Schedule I of the Environmental Impact assessment Notification is available on the MoEF Website.	▪ Could Be Applicable. If any of the Public Buildings (SDRF Training Facility), Bridges, Slope Protecton and River Bank Protection are in Hilly Terrain (above 1000 AMSL) and passing through ecologically sensitive areas. However, the EMF is designed to ensure that environmental safety

S.No.	Relevant Act	Scope of the Act	Implication for the EMF
			measures are integrated into the project.
8	The Ancient Monuments, Archaeological sites and Remains Act, 2010	▪ The Ancient Monuments and Archaeological sites should be protected from any developmental activity. The area within the radial of 100 m and 300m from the Protected Property are designated as Protected area and Controlled Area respectively. No development activity (including building, mining, excavating, blasting etc.,) is permitted in the Protected Area and developmental activities likely to damage the protected property are not permitted in the Controlled Area without prior permission of the Archaeological Survey of India.	▪ Deals with Cultural safeguards
9	Biological Diversity Act 2002 Biological Diversity Rules 2004	▪ The Biological Diversity Act, which came into force in February 2003, aims to promote conservation, sustainable use and equitable sharing of benefits of India's biodiversity resources. It provides for establishment of a National Biodiversity Authority at national level, State Biodiversity Boards at state level and Biodiversity Management Committees at the level of Panchayats and Municipalities	▪ Not relevant to project activities, except Bridges, Slope Protecton and River Bank Protection located in through ecologically sensitive areas, if any. ▪ Provides Ecological integration ▪ Increased ecological symbiosis (e.g. Pollination) increases production
10	Central Motor Vehicle Act, 1988 and Central Motor Vehicle Rules 1989	▪ This acts checks and controls vehicular emmissions and noise.	▪ Applicable ▪ All the plant, equipment, machinery, vehicles, etc. are required to comply with the act.

This policy and regulatory analysis suggests that the proposed sub-projects to be taken does not fall under any of the project categories listed in Schedule-I of the Environmental Impact Assessment Notification and hence does not require any formal environmental clearance of the Ministry of Environment and Forests, GOI. The project area has not been notified as ecologically sensitive or fragile under the Environment Protection Act, 1986. Though the state of Uttarakhand is dotted with a number of sites of religious, cultural and historical importance, wildlife sanctuaries and national parks, the proposed reconstruction sub-projects are expected to have limited impact on these sites. The project will also ensure that the

requirements of activities in the influence areas of any protected areas are also followed in the design and implementation of sub-projects.

3.5 Social Regulation

This deals with various policies, acts, rules and regulations promulgated by the central government related to social issues and relevant to present project.

3.5.1 RFCTLARAR Act 2013

Land Acquisition (LA) Act of 1984 commonly used for acquisition of land for any public purpose has been annulled with the enactment of the RFCTLARAR Act 2013. The RFCTLARRA is mentioned here to provide a perspective on the changing legal context with regard to land acquisition in the country. The new Act emphasizes elaborate social assessment and resettlement planning even prior to issuance of the preliminary notification and proposes to provide a range of R&R benefits along with the compensation package. Some of the highlights are as follows:

- Offers compensations up to 4 times the market value in rural areas and 2 times the market value in urban areas.
- The Act applies retrospectively to cases where land acquisition award has not been made.
- LA in Scheduled Areas will require consent of the local general assembly (Gram Sabhas).
- No displacement or dispossession until full payment of compensation and RR benefits are made and alternative sites for the resettlement and rehabilitation have been prepared.
- Bill requires the consent of no less than 70 per cent and 80 per cent respectively (in both cases) of those whose land is sought to be acquired in case of PPP or private projects.
- To safeguard food security and to prevent arbitrary acquisition, the Bill directs States to impose limits on the area under agricultural cultivation that can be acquired.
- In case land remains unutilised after acquisition, the new Bill empowers states to return the land either to the owner or to the State Land Bank.
- No income tax shall be levied and no stamp duty shall be charged on any amount that accrues to an individual as a result of the provisions of the new law.
- In every project those losing land and belonging to the SC or ST will be provided land equivalent to land acquired or two and a one-half acres, whichever is lower (this is higher than in the case of non-SC/ST affected families) -Where the affected families belonging to the SC and the ST are relocated outside of the district then they shall be paid an additional 25%

rehabilitation and resettlement benefits to which they are entitled in monetary terms along with a one-time entitlement of 50,000 rupees.

Minimum R&R Entitlements under this Act

The following are the minimum R&R entitlements under this Act:

1. Subsistence allowance at INR. 3000 per month per family for 12 months;
2. The affected families shall be entitled to: (a) Where jobs are created through the project, mandatory employment for one member per affected family or (b) Rupees 5 lakhs per family; or (c) Rupees 2000 per month per family as annuity for 20 years, with appropriate index for inflation; The option of availing (a) or (b) or (c) shall be that of the affected family
3. If a house is lost in rural areas, a constructed house shall be provided as per the Indira Awas Yojana specifications. If a house is lost in urban areas, a constructed house shall be provided, which will be not less than 50 sq.mt. in plinth area. In either case the equivalent cost of the house may also be provided in lieu of the house as per the preference of the project affected family;
4. One acre of land to each family in the command area, if land is acquired for an irrigation project if possible BUT the same shall be in lieu of Compensation;
5. INR 50,000 for transportation;
6. A one-time Resettlement Allowance of INR. 50,000;

Special Provisions for SCs and STs

In addition to the R&R package, SC/ST families will be entitled to the following additional benefits:

1. Land to be given to each family in every project even in the case of irrigation projects;
2. One time financial assistance of INR. 50,000 per family;
3. Families settled outside the district shall be entitled to an additional 25% R&R benefits;
4. Payment of one third of the compensation amount at very outset;
5. Preference in relocation and resettlement in area in same compact block;
6. Free land for community and social gatherings;
7. In case of displacement, a Development Plan is to be prepared.
8. Continuation of reservation and other Schedule V and Schedule VI area benefits from displaced area to resettlement area.

3.5.2 Some Key Legal Provision Related to Women

- The Sexual Harassment of Women at Workplace (Prevention, Prohibition, and Redress) Act, 2013

- Protection of Women from Domestic Violence Act, 2005
- The Criminal Law (Amendment) Act, 2013
- The Immoral Traffic (Prevention) Act, 1956
- The Maternity Benefit Act 1961

3.5.3 Other Applicable Acts

The following acts are applicable for the sub-projects to be taken up under the present project:

- Minimum Wages Act, 1948
- Contract Labour Act, 1970
- The Bonded Labour System (Abolition) Act, 1976
- Child Labour (Prohibition and Regulation) Act 1996 along with Rules, 1988
- Children (Pledging of Labour) Act, 1933 (as amended in 2002)
- The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995
- The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Rules, 1996
- Untouchability Offences Act, 1955
- The Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989
- The Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Rules, 1995
- Disaster Management Act 2005: specifies that while providing compensation and relief to victims of disasters there shall be no discrimination on the grounds of sex, caste, community, descent or religion.

3.6 List of Statutory Clearances and Authorizations Required

It is expected that certain permission, clearances and authorizations need to be obtained from competent authorities during the design, planning and implementation of the sub-projects. This will depend mainly on the area, type, size and scope of the sub-project. This requirement is summarized below:

Table 20: List of Statutory Clearances and Authorization Requirement

S.No.	Clearance/ Authorization	Relevant Act	Competent Authority	Responsibility
1	Environment Clearance/NOC (For sub-projects which requires such clearance, ex.: Public Buildings (SDRF	EIA Notification, 2006 (including amendments) issued under Environment Protection Act, 1986; F. No.11-48/2002-FC, MoEF, dated 14th September 2004	State Pollution Control Board; MoEF, Govt. of India, National Board of Wildlife	PMU/ Line Department

	Training Facility), Bridges, Slope Protecton and River Bank Protection in hilly terrain (above 1000 AMSL) and in ecologically sensitive areas, if their location requires)	(Annexed to this report) F. No. 6-10/2011 WL, MoEF, dated December 2012 (Annexed to this report)		
2	Forest clearance	Forest Conservation Act, 1980	State Forest Department, MoEF, Govt. of India	PMU/ Line Department
3	Tree Cutting Permission	Forest Conservation Act, 1980	State Forest Department, MoEF, Govt. of India	PMU/ Line Department
4	Hot mix plants, Wet Mix Macadam plants, Crushers, Batching Plants, Installation of Generators, etc.	Air (Prevention and Control of Pollution) Act, 1981 and Noise Pollution (Regulation and Control) Rules, 2000	State Pollution Control Board	Concerned Contractor
5	Storage, handling, transport and disposal of hazardous materials	Hazardous Waste (Management and Handling) Rules, 1989 and Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989	State Pollution Control Board	Concerned Contractor
6	Location/ layout of workers camp, equipment and storage yards	Environment Protection Act, 1986 and Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989	State Pollution Control Board	Concerned Contractor
7	Discharges from Labor Camp	Water (Prevention and Control of Pollution) Act, 1974	State Pollution Control Board	Concerned Contractor
8	Permission for sand mining from river bed	Environment Protection Act, 1986	Mines and Geology Department, GoU	Concerned Contractor
9	Permission for working in protected areas	The Indian Wildlife Protection Act, 1972, amended 1993 The Wildlife (Protection) Amemdment Act 2002	Chief Wildlife Warden, Government of Uttarakhand	PMU/ Line Department
10	Permission for working in protected areas	The Ancients monuments ands Archeological Sites and Remains Act 1958 and Rules 1959	Secretary, Culture Departement, Government of Uttarakhand	PMU/ Line Department
11	Pollution Under Control certificate for vehicles	Central Motor Vehicle Act 1988	Transport Department, Government of Uttarakhand	Concerned Contractor/ Department
12	Employing Labour/ Workers	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996	Labour Department, Government of Uttarakhand	Concerned Contractor/ Department

4. Environmental and Social Impacts

4.1 Prediction of Impacts

The UDRP aims to build Public Buildings (SDRF Training Facility), Bridges, Slope Protecton and River Bank Protection leading to overall improvement, to the quality of life in the habitations of the project area. Hence, from the project development objective, it can be seen that this project and the sub-projects would yield positive and beneficial impacts on the target population. However, any and all development interventions will also have some negative impacts. Keeping this in view the likely positive and negative impacts are listed below. The significance of these listed impacts would vary depending on the individual sub-project, its size and location. The size of the sub-projects would normally be small both physically and financially. Due to the likely small size of the sub-projects, adverse impacts, if any, would be at its minimum localized and reversible for the following reasons:

- Proposed project is construction of Public Buildings (SDRF Training Facility), Bridges, Slope Protecton and River Bank Protection; in a sense it is a mitigation measure for floods, as flood resilient structures are built including several technical assistance and capacity building initiatives to mitigate future oriented risks
- Significantly low social and environmental impacts

The following environmental and social impacts are predicted based on the assessment. The impacts could occur during the construction phase and/or operation phase. These possible positive impacts are listed below:

- Improved public safety and security
- Reduced sufferings during monsoons and adverse climatic conditions
- Better infrastructure and connectivity
- Improved access to services
- Productive use of time
- Improvements in income patterns
- Health and Environmental improvements
- Improvements in quality of life and human dignity
- Opportunities for social interaction
- Improved community participation and sense of ownership

The negative environmental and social impacts for each type of sub-projects are summarized in the table below:

Table 21: Negative environmental and social impacts

Project Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1. Public Buildings (SDRF Training Facility)	**M**	**M**	**M**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
2. Construction of Bridges	**L**	**L**	**L**	**L**	**M**	**M**	**M**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
3. Slope Protection Works	**L**	**L**	**L**	**L**	**M**	**M**	**M**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**
4. River Bank Protection Works	**L**	**L**	**L**	**L**	**M**	**M**	**M**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**	**L**

Code	Impact	Code	Impact	Code	Impact
A	Land acquisition	H	Ground Water Quality	O	Noise
B	Transfer of Government Land under Differenct Tenures	I	Destruction of Habitat/Flora Fauna	P	Smell
C	Involuntary Resettlement	J	Insect and Pest Menace	Q	Smoke
D	Land Use	K	Increased chemical pesticides/ fertilizers use	R	Disturbance to Other Services
E	Hydrology and drainage Pattern	L	Public Health	S	Air Quality
F	Water logging	M	Safety		
G	Surface Water Quality	N	Bio-diversity		

Impacts: S – Significant M – Moderate L - Low

The impacts indicated above are indicative. The actual impacts will only be known when the sub-projects are identified. If the impacts are significant, then a detailed Environmental/ Social Assessment will be carried out, then an EMP and RAP will be prepared as per the guidelines given in this ESMF.

These adverse environmental and social impacts are described in detail below:

4.1.1 Environmental Impacts

Since the sub-projects are yet to be finalized, mostly generic impacts which mostly could be caused by typical projects are listed under this section. However, certain specific impacts due to Housing and Buildings and Roads and Bridges sub-projects are also listed below:

Specific Impacts due to Buildings

- Loss of trees due to tree cutting
- Impact on land and soil like loss of productive soil and soil erosion
- Impacts due to quarrying of material
- Compaction and contamination of soil due to vehicular movements
- Impact on surface water bodies due to siltation
- Potential changes to local drainage patterns in and beyond the construction zone
- Impacts on surface water quality of rivers and other water bodies

- Impacts on aquatic ecology due to deposition of debris and temporary sedimentation and turbidity
- Impacts due to construction debris/waste
- Health and safety of construction workers and local people/ community
- Impacts due to transportation and storage of construction materials
- Reduction in air quality due to construction activities
- Increase in noise levels during construction

Specific Impacts due to Bridges

- Loss of trees due to tree cutting
- Impact on land and soil like loss of productive soil and soil erosion
- Changes in land use
- Impacts due to borrow areas and quarries
- Compaction and contamination of soil due to vehicular movements
- Impact on surface water bodies due to siltation
- Impacts on surface water quality of rivers and other water bodies
- Changes in hydrology and drainage
- Impacts due to construction debris/waste
- Health and safety of construction workers and local people/ community
- Obstruction and disruption of traffic
- Impacts due to transportation and storage of construction materials
- Reduction in air quality due to construction activities
- Increase in noise levels during construction
- Loss/ impact on common property resources

Specific Impacts due to Slope Protection Works

- Loss of trees due to tree cutting
- Impact on land and soil like loss of productive soil and soil erosion
- Changes in land use
- Impacts due to borrow areas and quarries
- Compaction and contamination of soil due to vehicular movements
- Impact on surface water bodies due to siltation
- Impacts on surface water quality of rivers and other water bodies
- Changes in hydrology and drainage
- Impacts on aquatic ecology due to deposition of debris and temporary sedimentation and turbidity
- Impacts due to construction debris/waste
- Health and safety of construction workers and local people/ community
- Obstruction and disruption of traffic
- Impacts due to transportation and storage of construction materials
- Reduction in air quality due to construction activities
- Increase in noise levels during construction
- Loss/ impact on common property resources

Specific Impacts due to River Bank Protection Works

- Loss of trees due to tree cutting
- Impact on land and soil like loss of productive soil and soil erosion
- Changes in land use
- Impacts due to borrow areas and quarries
- Compaction and contamination of soil due to vehicular movements
- Impact on surface water bodies due to siltation
- Impacts on surface water quality of rivers and other water bodies
- Changes in hydrology and drainage
- Impacts on aquatic ecology due to deposition of debris and temporary sedimentation and turbidity
- Impacts to aquatic ecology due to dredging works
- Impacts due to construction debris/waste
- Health and safety of construction workers and local people/ community
- Impacts due to transportation and storage of construction materials
- Reduction in air quality due to construction activities
- Increase in noise levels during construction
- Impacts on the local socio-cultural activities
- Loss/ impact on common property resources

The generic impacts for typical projects to be taken up under the project are listed below:

Impacts on Topography

There will not be major adverse impacts on the topography on account of the sub-projects to be proposed. Yet there might be the following temporary impacts, which could be mitigated using the specified mitigation measures.

- Erosion and sedimentation
- Temporary disruption of natural drainage pattern
- Loss of fertile top soil of the agriculture lands
- Accumulation of excess excavated earth in the area of construction and operation
- Excess earth and debris blockage and change in drainage pattern
- Changes to hydrological regime, increased flooding, siltation hampering stream flows, etc.

Impacts on Climate

No changes in climatic conditions or impacts on climate are anticipated due to the sub-projects to be proposed as part of the UDRP-AF.

Impacts on Surface Water

The sub-project activities during construction or operations are not expected to interfere with the surface water characteristic of the river or its tributaries. Hence, impacts on surface water are not anticipated. The following temporary impacts are identified.

- Reduced flow to the downstream users at specific points due to river diversions
- Surface water pollution due to oil and grease from construction vehicles
- Degradation of river banks due to excavation and construction activities

Impacts on Air Quality

During the construction phase excavation process, suspended particulate matter and dust are major sources of pollution impairing air quality. However, on the sub-project construction sites the impact on air quality due to the sub-projects is likely to be higher. During construction and sometimes during operation, use of hot mix plants/ drum mix plants, generators, transportation and lifting machinery will be unavoidable. Emissions from the exhaust of these are likely to cause localized and temporary air quality impacts. Adequate dust suppression measures and protective measures to the work force will significantly reduce impacts. As the sub-projects to be proposed would be small by nature, the impact of air pollution will not be very significant. Since these impacts are temporary, adequate precautions during the construction period will mitigate them. There will not be any significant air quality impacts during the operation phase of the sub-projects. However, the following possible impacts are listed.

- Increased dust levels due to earth work excavation and construction activities
- Increased air pollution and smell
- Air pollution through ventilating shafts of machinery, plant and equipment

Impacts on Noise Levels

Movement of vehicles transporting construction material and noise generating activities at the construction site, are major sources of noise pollution during construction. Material movement and associated work are the primary noise generating activities on site. These will be distributed over the entire construction period. Construction activities are expected to produce noise levels that can affect the personnel working on site. Activities involving vehicles, plant and equipment in the close proximity of households will have an adverse impact due to noise pollution. These impacts are temporary and limited to the construction phase. Except during regular maintenance activities, no noise generating activities are envisaged during the sub-projects operation phase. Hence, no noise impacts are predicted. However, the some possible impacts are listed.

- Increased Noise Levels during Construction
- Noise due to movement of vehicles
- Increased Noise Levels during operation
- Noise impact due to operation of DG sets

Impacts on Ecological Resources

The sub-project activities do not involve encroachment of sensitive environmental features, cutting of trees or removal of vegetation. The proposed sub-projects are not in an eco-sensitive zone or coastal zone. Hence, there will not be any adverse ecological impacts due

to the project. However, the following impacts are enumerated, which need to be taken care of in the ESMF.

- Ecological impacts due to cutting of trees

Other Issues

Visual impacts
- Disruption to visual resources
- Standing out as Eyesore in the surroundings
- Ugly and unsightly conditions

Damage
- Damage to road surface /other utilities

Hazards
- Digging of unplanned borrow pits on the road side/ other locations causing inconvenience to public and leading to accidents

Nuisance
- Storage of materials causing disturbance to public and traffic
- Mosquito and fly nuisance

Disease
- Disease transmission and Public Health issues
- Spills of solid waste enroute construction sites

Other probable issues
- Plying vehicles on unpaved roads
- Stagnation of water due to construction activities
- Tree branches obstructing the vision of the drivers of vehicles
- Oil spillages

4.1.2 Social Impacts

The proposed works may not have significant social impacts due to the nature, type and size of the works. However, the following social impacts could possibly arise out of the proposed projects:

- Deprivation and Displacement
    - Due to acquisition of private residential or agricultural or commercial land and also transfer of Government land under different tenure systems
    - Loss of assets/ infrastructure
    - Loss of Common Property Resources/ Community Assets
    - Loss of Livelihoods
    - Loss of access to houses/ businesses

- Inconvenience and nuisance to Public
    - Due to accumulation of excavated earth
    - Disturbance to traffic and resulting congestion
    - Disruption of utilities such as water, electricity, telephone, cable, etc.
- Social issues
    - Social disruption in the area of construction
    - Social unrest issues on construction sites
    - Regional labour issues
    - Child labour
    - Ill treatement, sexual harrassment and exploitation of women and children
    - Lesser wages to women
    - Gender Issues
- Safety hazards
    - To the households in the neighborhood during construction
    - Due to impact of vehicles on the road and land outside roads
    - Due to risk of accidents
- Health Hazards
    - Due to stagnation of water leading to mosquito breeding and public health problems
    - Due to spread of AIDS at construction sites
    - Due to surface water pollution
    - Due to groundwater pollution

1. Implementing an appropriate Environment Management Plan and an R&R policy and entitlement framework along with proper implementation of the Environmental Social Management Framework could mitigate the above mentioned negative social impacts.

2. Presently the sub-projects are yet to be fully identified, for the reason that the project is in the process of taking a final shape. As this situation was envisaged beforehand, GoU went ahead with the preparation of ESMF for UDRP-AF. This ESMF has a system for Environmental and Social categorization of sub-projects and Environmental and Social Mitigation measures. As the sub-projects are yet to be identified and are yet to be prepared, no sub-project specific mitigation measures could be identified. As the sub-projects are continued to be identified and the identified ones are under preparation, check lists have been provide for screening the sub-projects and categorize them for further action.

5. Environment and Social Management Framework

5.1 Introduction

1. The UDRP-AF sub-projects are yet to be identified. Further the implementation of these sub-projects will take place over a period of time and this time lag will lead to changes in the environmental and social assessments. For such reasons preparation and implementation of an ESMF is proposed for this project.

5.2 Screening

2. During the screening, as a first step, the environmental and social impacts are identified through filling in an environmental and social data sheet. The basic objective of the filling in this data sheet is to collect basic information on environmental and social aspects of the proposed sub-project. Further the ESMF requires that basic environmental and social data pertaining to the proposed sub-project be compiled during the field data collection stage. For this purpose, a simple Environment and Social Data Sheets (ESDS) were formulated for Public Buildings, Bridges, Slope Protection and River Bank Protection sub-projects and annexed to this ESMF. The sub-project Implementing Agency fills up these ESDS with the facilitation support of the DPIUs duly identifying the environmental and social issues of concern. Supplementary notes on environmental and social concerns will also be added to those ESDS. The sub-project Implementing Agency will do the screening through collection of necessary field data. PMU would supervise the screening categorization process ensuring that the person/ Unit has the capacity and familiarity with Bank safeguards policies/ framework approach to undertake these activities. These ESDS are attached to the sub-project project proposal/ concept note.

3. Several steps are taken by the project to avoid and/or minimize adverse impacts on the environment and people. These include a) use of existing locations wherever possible and appropriate, b) fresh locations for bridges, slope protection works and river bank protection works, especially those within Reserved Forest Areas, and Protected Areas, activities that require clearance from MoEF under the Environmental Impact Assessment Notification, 2006 (as amended from time to time) without the requisite clearances and approvals will not be considered. However, for all sub-projects environment clearances and approvals, when required, will be acquired before bidding. This screeing process will determine the requirement of approval/ clearances. List of approvals to be obtained are given in section 3.4.

4. During the screening process, the sub-projects are also categorized. The basic objective of this categorization is to ensure that sub-projects with potentially significant environmental/ social issues are identified at an early stage for detailed environmental/ social assessment. Further evaluation of all the available information on environmental and social aspects as provided in the ESDS and assessment based on the level of expected environmental and social impacts (including any field visits if required), whether the proposed sub-project is qualified for categorization as Ea/Eb and Sa/ Sb takes place during

this phase. As a part of ESMF process the screening and sub-project categorization will be cleared by The World Bank, before taking up EA/SA. This is further detailed in the paragraphs below.

5. The results of Screening of sub-projects will be shared with the World Bank for review prior to sub-project categorization.

5.3 Categorization

6. In order to give an indication of scale and size of environmental and social impacts, the sub-projects are categorized. This categorization is required to carry out the appropriate level of assessments for different types of sub-projects based on the nature, scale and magnitude of their social and environmental impacts. Categorization would help in focussing time and effort in sub-projects that have significant impacts. The social and environmental categorization of sub-projects is proposed to be as under:

5.3.1 Environmental

7. Based on environmental impacts the sub-projects are categorized into two categories;

1) E1, where there are significant adverse environmental impacts
2) E2, where there are moderate to minimal adverse environmental impacts

8. The E1 category sub-projects require conducting a comprehensive Environmental Impact Assessment (EIA) and preparation of an Environment Management Plan (EMP) by Independent Consultants prior to preparation of DPR for appraisal by PMU. This EIA and EMP need to be disclosed before the start of procurement for that sub-project. Annexure 6 provides the contents of an EIA for sub-projects categorized as E1. Additional guidance on EMP contents is also attached as Annexure 7.

9. The E2 category sub-projects need not conduct an EIA, but require an EMP, which is to be prepared by Design Consultants following the guidelines given in this ESMF. This EMP becomes a part of the DPR, which will be appraised by PMU. If, under special circumstances, PMU identifies a need for a limited environmental assessment, then it needs to be conducted.

The rationale for using the design consultant to prepare the EMP for E2 category sub-projects is that the impacts are moderate to minimal and the model EMP given in the ESMF need to be adopted and modified to prepare a specific sub-project EMP.

5.3.2 Social

10. Based on social impacts the sub-projects are categorized into two categories;

1) S1, where there are more than 20 Project Affected Families (PAFs),

2) S2, where there are less than 20 PAFs

The NRRP 2007 suggests that a Social Impact Assessment be done when a Project involves involuntary displacement of 400 families or more en masse in plain areas or 200 families or more en masse in tribal or hilly areas. Since the UDRP will have several sub-projects, the requirement for conducting Social Assessment is fixed at displacement/ impacts on 20 families.

11. The S1 category sub-projects require conducting a comprehensive Social Assessment (SA) and preparation of a Resettlement Action Plan (RAP), as per format attached in Annexures, by Independent Consultants prior to preparation of Detailed Project Report (DPR) for appraisal by PMU. This SIA and RAP need to be disclosed before the start of procurement for that sub-project.

12. The S2 category sub-projects need not conduct SA but need to prepare an Abbreviated Resettlement Action Plan (ARAP), as per format attached in Annexures, and need to include the Social Management Plan (SMP) which is to be prepared by Design Consultants following the guidelines given in this ESMF. The preparation of ARAP requires a census survey of the PAFs. This SMP becomes a part of the DPR, which will be appraised by PMU. If, under special circumstances, PMU identifies a need for a limited social assessment, then it needs to be conducted.

The rationale for using the design consultant to prepare the ARAP for S2 category sub-projects is that the impacts are less than 20 PAFs and the entitlement matrix given in the ESMF need to be adopted and modified to prepare a specific sub-project ARAP by conducting a census survey of the PAFs.

5.4 Environmental Impacts and Mitigation

13. The sub-project categorization as E1 or E2 need to be done on the basis of field visits, primary and secondary data and analysis. After identifying the impacts, the mitigation measures need to be determined. Some generic mitigation measures are included as a guidance, in this ESMF. These have not been included here to avoid repetition. This guidance table also includes information on whether these mitigation measures have to be undertaken in the planning/ design, construction and operation phases. However, each category of sub-projects needs to incorporate mitigation measures as given below:

5.4.1 E1 Category

12. For E1 category sub-projects, a social and environmental consultant, independent of the design consultants, need to be engaged to carry out an Environment Impact Assessment and prepare an Environment Management Plan. In this regard PMU need to prepare a Terms of Reference (ToR) for the environmental consultants for EIA of this category of projects. This ESMF needs to be shared with these consultants for following the procedures and using

the relevant information in their assessment. This EIA and EMP need to be disclosed before the start of procurement for that sub-project.

5.4.2 E2 Category

13. For E2 category sub-projects, the design consultants would have to prepare the EMP. PMU need to share this ESMF containing the impacts and mitigation measures with the design consultants for them to use in the preparation of the EMP that needs to be submitted along with the DPR. PMU will ensure that the Terms of Reference for the Design Consultants will include these. The rationale for using the design consultant to prepare the EMP for E2 category sub-projects is that the impacts are moderate to minimal and the model EMP given in the ESMF need to be adopted and modified to prepare a specific sub-project EMP.

5.4.3 EMP to be Part of Contract Documents

14. In case of E1 and E2 sub-projects, PMU need to ensure that the EMP is provided as a part of the contract documents to the contractor facilitating its integration into the main works. This integration of relevant management provisions in the bid/contract document, will need to be reviwed and confirmed by the World Bank.

5.5 Social Impacts and Mitigation

15. The UDRP in the process of planning and implementing sub-components that require land will consider alternative engineering designs to avoid or minimize land acquisition and transfer of Government land under different tenure in order to avoid and minimize adverse social impacts on the people and communities. Particularly focus will be made to (i) avoid or minimize displacement from homesteads resulting in involuntary resettlement; (ii) avoid or minimize displacement from buildings/structures used for permanent business/commercial activities other such sources of income; (iii) avoid or minimize transfer of public land that will have adverse social, economic and cultural impacts on families and communities who depend on them causing involuntary resettlement and loss of access to natural resources.

16. As mentioned earlier, all the sub-projects under the UDRP aim at improving safety and security of the target population from floods and improving their living standards. Many of the sub-projects under UDRP are reconstruction of damaged infrastructure. These investments would improve the performance of the existing infrastructure. However at this stage, it is not possible to identify as to how many and who will be affected by which sub-project. The individual sub-projects proposals will mention the number and categories of the population likely to be affected. Hence, a Resettlement Policy Framework is prepared for the following reasons:

- Most sub-projects are mere reconstruction of existing damaged infrastructure
- The sub-projects are yet to be finalized/ proposed
- Likely inclusion of new sub-projects
- Time lag between sub-project identification and implementation

The following guidelines of UDRP will address any adverse impacts caused by it.

Impact Mitigation

17. Resettlement of Project Affected Persons (PAPs) will be planned and implemented as an integral part of UDRP where acquisition of private land and transfer of public land are unavoidable. The impacts covered are (i) loss of homestead resulting in involuntary resettlement; (ii) loss of assets or access to social, economic and cultural assets and (iii) loss of income sources of means of livelihood, whether or not the affected persons must move to another location.

Vulnerability in terms, such as, of social, economic, age, differential abilities and gender differentiations of the PAPs will be identified and mitigated with appropriate actions as part of Resettlement Action Plan (RAP).

Eligibility Criteria

18. The criteria for eligibility for compensation to lost assets and resettlement assistance will include (i) those who have title and rights to land and other assets, including those with customary and traditional rights recognized under Indian legal framework; (ii) those who do not have title and formal legal rights to land and other assets at the time of census survey but have a claim to such land and such assets if such claims are recognized under Indian legal framework or could become recognized through a process identified in the RAP and (iii) those who do not have recognizable legal right or claim to the land and other such assets they are occupying.

Those who are included in (i) and (ii) in the above mentioned paragraph will be eligible for compensation for land and other assets in addition to resettlement assistance. However, those included in (iii) will be eligible for compensation only for the assets lost and also for resettlement assistance.

19. The proposed Resettlement Policy Framework would address these impacts. PMU will screen all the sub-projects prior to approval to ensure their consistency with the Resettlement Policy Framework provided as guidance. The Entitlement Matrix of the project reflect the project plan to address adverse impacts and mitigation based on the eligibility criteria mentioned above.

5.5.1 S1 Category

20. As per the categorization of the projects, for S1 category sub-projects, if the number of PAFs exceeds 20, then PMU would ask the concerned department to conduct a comprehensive Social Assessment and prepare a Resettlement Action Plan (RAP), as per format attached in Annexures before project appraisal. Like in case of Environmental Impact Assessment, this Social Assessment too will be done by a consultant independent of the design consultants and this SIA and RAP need to be disclosed before the start of procurement for that sub-project. For S1 category sub-projects the project would provide a detailed terms of reference to the SIA consultants. Apart other tasks the SIA would include the following:

- Definition of component/sub-component area
- Assessment of land required under different tenure systems
- Options for land – land acquisition, transfer of Government land under different tenure systems and voluntary land
- Assessment of current patterns of use of such land
- Identification of PAPs
- Census socio-economic survey
- Findings of SIA – socio, economic and cultural impacts
- Categorization of all Project Affected Persons including those without title

5.5.2 S2 Category

21. For these category sub-projects, PMU will ensure that an Abbreviated Resettlement Action Plan (ARAP) is prepared as per format attached in Annexures and the project proposals prepared by design consultants would include measures to mitigate adverse impacts as per the Resettlement Policy Framework. PMU will ensure that the ToR for the Design Consultants will include these. The rationale for using the design consultant to prepare the ARAP for S2 category sub-projects is that the impacts are less than 20 PAFs and the entitlement matrix given in the ESMF need to be adopted and modified to prepare a specific sub-project ARAP by conducting a census survey of the PAFs.

5.6 Sub-project Cycle and Environmental and Social Requirements

22. The environmental and social required to be fulfilled during the sub-project cycle; i.e., during pre-planning, planning, implementation and Operation and Maintenance (O&M) are listed in the below table and the flow chart.

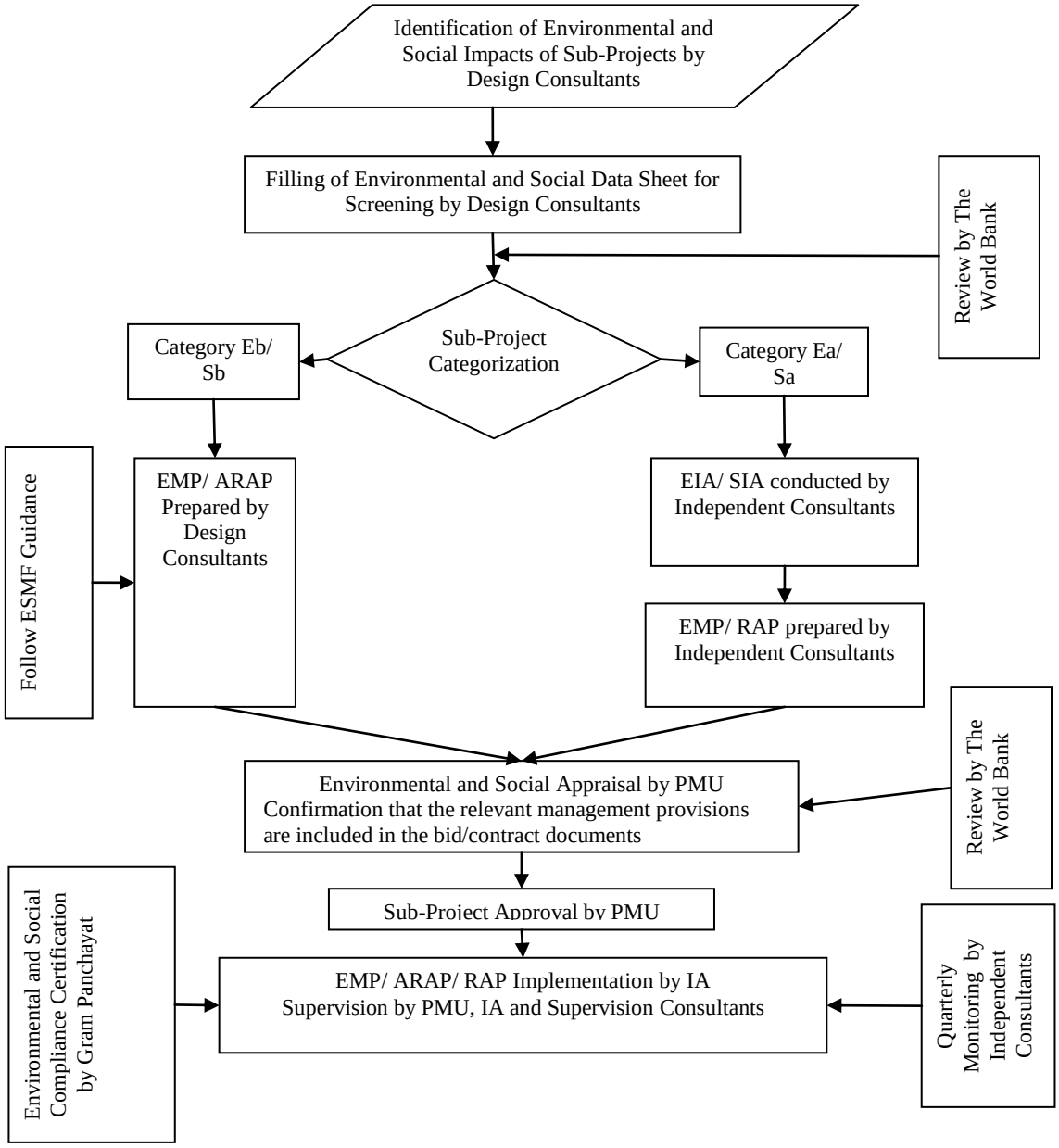


Figure 1: Environmental and Social Management Flow Chart

Table 22: Environmental and Social Activities and Responsibilities to be fulfilled during the sub-project cycle

Phase	ESMF Activity	Objectives	Process	Responsibility	Result
Preplanning	**Identification** Environmental and Social Data Sheet	To collect basic information on environmental and social aspects of the proposed sub-project.	The ESMF requires that basic environmental and social data pertaining to the proposed sub-project be compiled at the field data collection stage. For this purpose, a simple Environmental and Social Data Sheet (ESDS) and a simple Socio-Economic Survey format were formulated for sub-projects. The formats for the ESDS are furnished under annexures. The sub-project Implementing Agency (IA) fills up the ESDS with the facilitation support of the DPIUs duly identifying the environmental and issues of concern. Supplementary notes on environmental and social concerns to be added to those data sheets.	Implementing Agencies (IAs)	ESDS prepared and attached with the project proposal / concept note
Planning	**Screening and Categorization** Environmental and Social classification of the sub-project	To ensure that sub-projects with potentially significant environmental/ social issues are identified at an early stage for detailed environmental/ social assessment.	Evaluate all the available information on environmental and social aspects as provided in the ESDS and assess, based on the level of expected environmental and social impacts (including any field visits if required), whether the proposed sub-project is E1/E2 and S1/ S2. For E2 and S2, the design consultants will prepare EMP and ARAP along with the DPR.	DPIU, Design Consultants	Sub-project classified as E1/E2 and S1/S2. As a part of ESMF process the screening and sub-project categorization need to be cleared by The World Bank, before taking up E1/S1.
Planning	**Preparation** Environmental and Social Assessment and Management Plans	To conduct Environmental/ Social Assessment and Prepare Management Plans for integration into sub-project DPR	For E1/ S1 category sub-projects for which detailed environmental/ social assessment is required, this E1/S1 and preparation of EMP/ RAP will be done by consultants independent of the Design Consultants.	Independent Consultants	EA/ SA done. EMP/ RAP Prepared and disclosed prior to start of procurement for that sub-project.

Phase	ESMF Activity	Objectives	Process	Responsibility	Result
Planning	**Appraisal** Environmental and Social appraisal	To ensure that relevant environmental and social issues have been identified and appropriate mitigation measures have been designed to address them.	For E2 and S2 sub-projects, there shall be no separate environmental/ Social appraisal but environmental/ social aspects shall be included in the normal appraisal and evaluation process for the proposed sub-project, based on the ESDS included in the DPR. All these sub-projects need to follow the mitigation measures detailed in the ESMF Guidance. This will be ensured by the DPIUs. For projects requiring a detailed Environmental/ Social Assessment, including evaluation of environmental/ social impacts, risk assessment if needed, and design of mitigation measures, will be done by the PMU Environmental and Social Managers.	PMU Environmental Expert Social Expert	Environmental and social appraisal of the project is made and approval of proposed sub-project, with decision to (i) accept scheme as submitted, or (ii) accept scheme with modification suggested in the environmental/ social appraisal.
Planning	**Approval** Environmental and Social approval required	To ensure that mitigation measures and their cost are integrated in scheme design and implementation plans	Approval for the sub-project will not be accorded without the appraisal by PMU and the review of ESA by The World Bank	PMU	Technical Sanction for sub-projects with environmental and social mitigation measures and accordingly its costs are integrated in sub-project design and implementation plans.
Implementation	**Implementation** Implementation of Environmental and social mitigation measures.	To ensure that the prescribed environmental and social mitigation measures (including construction stage) are implemented.	The prescribed environmental and social mitigation measures (including construction stage measures) as identified through the environmental and social appraisal process are adequately implemented. Implementation Completion Report (ICR) for sub-project will need to include an Environmental Compliance Certificate and Social Compliance Certificate given by the Gram Panchayat indicating that the mitigation measures	Gram Panchayat PMU	ICR with environmental and social compliance information.

Phase	ESMF Activity	Objectives	Process	Responsibility	Result
			identified in the appraisal (including construction stage) have been implemented.		
O&M	**Supervision, Monitoring and Evaluation** Environmental supervision, monitoring and evaluation IEC and capacity building on environmental and social issues.	To ensure that environmental and social aspects are integrated in the O&M phase.	Monitoring of indictors will be conducted as per project monitoring protocol. Supervision will be conducted by the designated environmental officers of the implementing agencies for all the sub-projects All sub-projects will be monitored by PMU. Capacity building and IEC activities are undertaken to enable effective implementation of the ESMF including assessment procedures, supervision, monitoring, etc. as well as for community awareness and sensitization. This will be done by the IA and in turn the IA will be trained by PMU.	PMU External Consultants	PMU will submit quarterly reports to The World Bank on Safeguards Implementation. Quarterly monitoring reports by Independent Consultants. Periodic environmental and social supervision reports. Training and IEC activity reports.

5.7 Monitoring and Evaluation

19. The ESMF requires detailed supervision, monitoring and evaluation of the impact of the project on the environment and social aspects. In order to carry out this, PMU will have specific arrangements made at state and district level. This includes appointment of an Environmental Manager and Social Manager for the project period. Further the PMU will instruct PIUs and DPIUs on how to implement the provisions of this ESMF. At the field level the staff of the implementing agencies has experience of implementing projects concerning their departments and does land acquisition for their project. Implementation of the provisions of ESMF will be new to these staff and hence several orientations and trainings are proposed as a part of this ESMF to build their capacity. In order to achieve the objectives of this ESMF and to ensure the safeguards are implemented in a proper manner, the following provisions are made in this ESMF:

- Independent Environment aand Social Audit

20. The PMU will be in charge of implementing the ESMF. The Environmental and Social Managers of PMU will guide and oversee the implementation of the ESMF at field level. This overall guidance will be given by them. Further the PMU will incorporate the provisions of this ESMF as actionable points in the Project Operations Manual or other similar document for the project. These will be non-negotiable and will have to be followed by all PIUs and DPIUs. The Environmental and Social Managers will oversee the application of these provisions and guide the process, while at the same time building the capacity of the PIUs and DPIUs.

21. At the field level the designated environmental engineers of the implementing agencies / the supervision consultants will ensure the implementation of the ESMF.

22. The following provisions include the arrangements made for the effective implementation of the ESMF:

5.7.1 Environmental supervision

23. This is basically done by PMU. All the sub-projects will be visited at regular intervals by PMU to check if all safeguard requirements are met and to identify any issues that need to be addressed. PMU would submit quarterly progress reports to The World Bank on safeguards implementation.

5.7.2 Environmental and Social Parameters

24. Once every year, the PMU will prepare a report of the environmental and social situation in the project districts including data and analysis of relevant parameters as given below:

- Environmental parameters
  - Rainfall
  - River bank erosion
  - Land slides

- Sedimentation in water bodies

- Social parameters
  - Adequacy of entitlements (replacement cost, allowances, income generation grant, etc.)
  - Payment of compensation and entitlements before replacement
  - Time taken for land acquisition and transfer of Government land under different tenure system
  - Number of grievances registered and resolved within specified time frame
  - Number of court cases
  - Income
  - Land holding status
  - Ownership of household assets

25. This report also should give a listing of relevant new legislation and regulations that have a bearing on the environmental social performance of the project. PMU will submit this report to The World Bank. The ESMF will be suitably revised annually on the basis of this document by the PMU.

5.7.3 Concurrent Internal Monitoring

26. The concurrent internal environmental social monitoring will be done as part of the regular monitoring by the design and supervision consultants and implementing agencies.

5.7.4 Monitoring Plan

27. Given in the table below are indicators for project investments, for which monitoring need to be taken up by PMU in a regular manner.

Table 23: Indicators for project investments

Project Components	Monitoring Indicators	Frequency	Agency
1. Public Buildings (SDRF Training Facility) 2. Construction of Bridges 3. Slope Protection Works	**Environmental parameters** • Rainfall • River bank erosion – Area Affected Sq. m • Land slides – Area Affected Sq. m • Sedimentation in water bodies - Turbidity • Debris deposits on lands – Area/ No. of	• Quarterly by PMU	• PMU guiding the collection of information on indicators • Implementing Agencies/

Table 23: Indicators for project investments			
Project Components	**Monitoring Indicators**	**Frequency**	**Agency**
4. River Bank Protection Works	locations **Social parameters** • Adequacy of entitlements (replacement cost, allowances, income generation grant, etc.) • Payment of compensation and entitlements before replacement • Time taken for land acquisition • Number of grievances registered and resolved • Number of court cases • Income patterns • Land holding status • Income from land • Changes in occupations • Housing status (area, floor, walls, roof, etc.) • Ownership of household assets • Length of rural roads (connectivity inside and outside the village) **Other** • No. of training programs conducted • No. of personnel trained • Trainees' understanding of the training content • Achievement of learning objectives • Application of methods, tools and techniques learnt during training • Adherence to contract conditions and standards (housing, sanitation, crèches, use of local labour, equal wages to men and women, avoidance of child labour, etc.) • Absence of inconvenience, nuisance and complaints • No. of sub-projects completed without time and cost overruns • Adherence to ESMF provisions/ guidelines during sub-project preparation and implementation		Departments for department specific information

5.8 Stakeholder Consultation

28. During the UDRP-AF preparation, several consultations were held with the line departments, where several details regarding the actual situation in the affected area were gathered. Discussion with implementing agencies of on-going UDRP project also helped to identify impact and efficacy of mitigation mesures. Formal Stakeholder Consultation Workshop with the participating departments and other stakeholders will be conducted in the month December 2017 and their feedback on the ESMF will be used in revising the ESMF.

5.8.1 Stakeholder Involvement and Consultation

29. PMU would engage Design consultants to assist them in preparing the sub-project DPRs. In the ToR for these consultants, there is an explicit requirement for the consultants to carry out public/ stakeholder consultations. This is a mechanism to ensure the upfront public/ stakeholder inputs in the preparation of the sub-projects.

30. For all sub-projects, PMU would have to direct the consultants to preparing the DPRs/ SA/ EA / RAP/ ARAP / EMP to involve all the stakeholders and conduct consultations. In the ToRs for the preparation of these outputs, public/stakeholder consultations form an integral part. For such type of sub-projects obtaining consent of the local agencies and necessary clearances from competent authorities is mandatory and should form part of the preparation of DPRs/ SA/ EA / RAP/ ARAP / EMP. These outputs will be reviewed by the World Bank.

31. During sub-project implementation GPs and Community Based Organizations (CBOs) will be involved. Project monitoring reports would be disseminated in the public consultation meetings in the GPs. The stakeholder meetings would discuss the sub-project progress reports and make recommendations for sub-project control and modifications. These recommendations would be made use for future sub-project design. Consultations are required for preparation of all safeguards mitigation documents and these consultations should be an on-going activity over the life of the project. These would be documented in the DPRs/ SA/ EA / RAP/ ARAP / EMP for each sub-project.

5.6 Disclosure

5.9.1 State Level

33. PMU and the implementing agencies shall disclose this entire ESMF and all Safeguards related documents and mitigation plans, viz., SA/ EA / RAP/ ARAP / EMP, at their website. These need to be translated into local language (Hindi) and placed on the website. The Resettlement Policy Framework will be disclosed along with the entitlement framework, though this is a part of the ESMF, these documents shall be separately identified and disclosed in the PMU website. These two documents shall also be translated into Hindi and made available at the PMU's website.

5.9.2 District Level

34. PMU will also arrange to disclose the final versions of the ESMF, SA/ EA / RAP/ ARAP / EMP, Resettlement Policy Framework and Entitlement Matrix, in Hindi and English, in all the District Collectors Offices, PIUs, DPIUs and the local offices of the implementing agencies. These would be in place once the final versions are ready. When this document is updated, then the copies in the different locations would also be updated.

5.9.3 Disclosure by the World Bank at the Infoshop

35. The World Bank will disclose this ESMF and any future EA/ SA along with EMP/ RAP at the infoshop for downloading and reference by interested parties.

36. During the implementation phase, all the sub-project ESAs shall be disclosed by PMU and the implementing agencies both at the local level and at the state level. These ESAs will also be disclosed at the Infoshop of The World Bank.

5.10 Comprehensive ESMF Review and Updation

37. UDRP-AF would undertake one thorough/ comprehensive review of the ESMF during the project period. Based on the review, the ESMF would be updated if necessary. UDRP-AF would undertake this review and revision prior to mid-term review by the World Bank. Any revision of this ESMF will have the concurrence of the World Bank.

5.11 Grievance Redress Mechanism

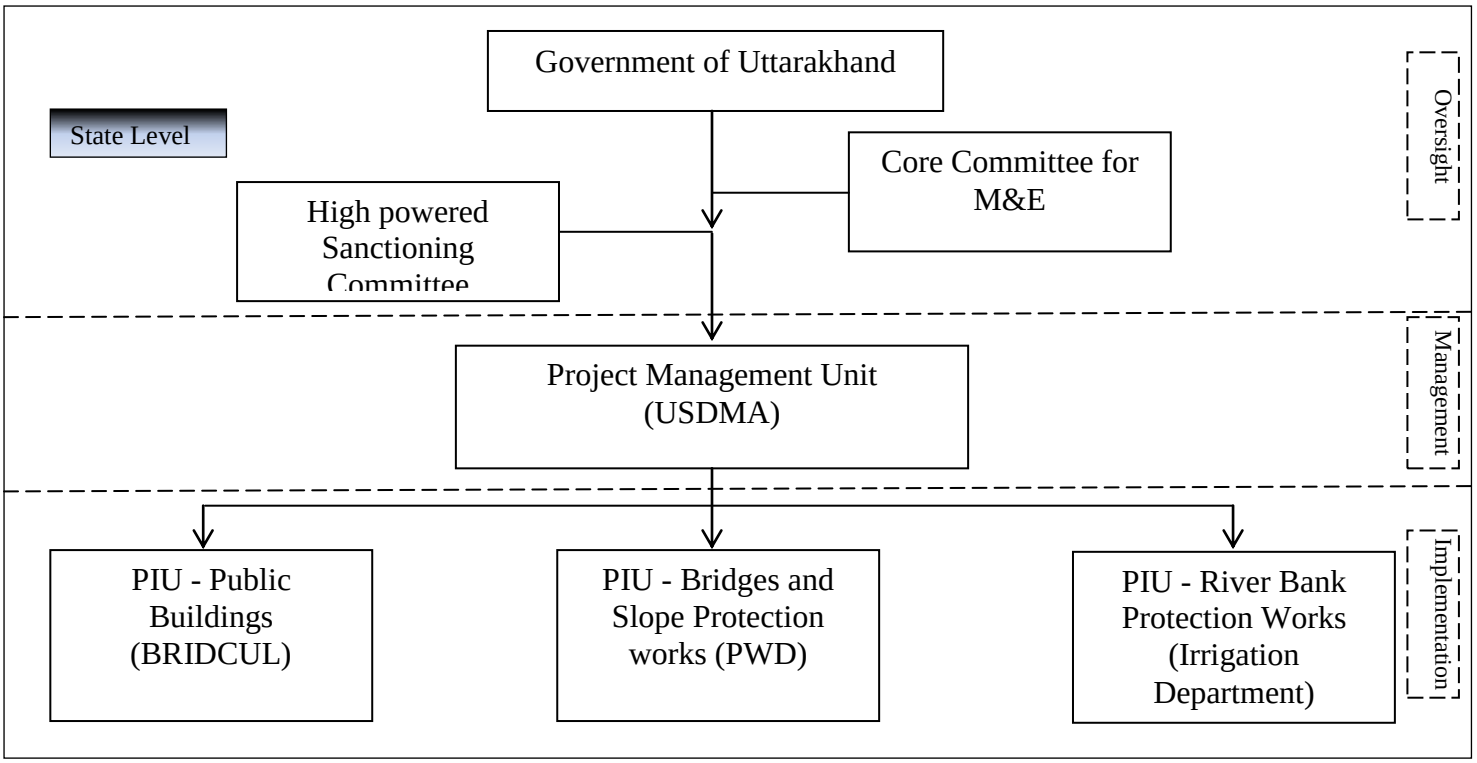
38. PMU will have a grievance redress mechanism which will look into all aspects of sub-projects and their activities apart from R&R related grievances. The Resettlement Policy Framework can be referred for details on Grievance Redress Mechanism.

6. Institutional and Implementation Arrangements

6.1 Introduction

1. Under the Disaster Management Act 2005, Uttarakhand constituted the State Disaster Management Authority (USDMA). The State has also established the Disaster Mitigation & Management Centre (DMMC) which works as an autonomous institute under aegis of Department of Disaster Management Government of Uttarakhand. DMMC is the apex center in the field of Disaster Mitigation & Management in Uttarakhand which functions as a think-tank for the State and incorporate prevention, preparedness and mitigation aspects for all projects.

2. The Government of Uttarakhand will setup a three level project monitoring and implementation mechanism. At state level over all oversight will be ensured by a setup of two committees one headed by the Chief Secretary for monitoring and another headed by the Additional Chief Secretary for providing sanctions and overall coordination of the reconstruction program. The second level will consist of a Project Management Unit, headed by full time project director supported by coordinators for each of the components and supported by function and technical experts. Third level consists of PIUs in the implementing agencies that at state level will have individual project coordinators supported by the functional experts and at field level implementing units with technical staff. Entire implementation setup will be exclusive to the project and work full time. At district level additional coordination and oversight will be ensured by the District Magistrates. The following diagram gives a schematic arrangement of the project implementation and monitoring arrangements:



3. The PMU will be responsible for the following:

a. Coordination with the line agencies in approval of designs, assisting the PIUs in preparation of: DPRs, bidding documents, tendering schedules, etc.
b. Appointment of technical assistance consultants and others safeguards management support to the implementing agencies.
c. Quality Assurance through third party audits
d. Maintaining MIS and Quarterly reporting.
e. Progress reporting, financial management, monitoring and reporting.
f. Ensuring compliance with agreed implementation procedures and other Bank requirements, etc.

4. The PIU will be responsible for

a. Preparation of Detailed Project Reports including technical designs, surveys and investigations etc.
b. Tendering, bid evaluation, contract award, contract management etc.
c. Financial Management and safeguards compliance
d. Progress and expense reporting to the PMU
e. Coordination with district level coordination committees, etc.

I. Project administration mechanisms

5. The follow table 7 lists the implementing arrangements for individual components and subcomponents.

Table 24: Implementation Department for Project Components

Components	Implementing agency	Comments
Public Buildings	BRIDCUL	Separate PIUs under direct control of PMU will take up the component through their district EAs. Upon completion the assets will be handed over to the concerned department
Bridges and Slope Protection Works	PWD	
River Bank Protection Works	Irrigation Department	

6. **Support and Monitoring of Reconstruction components:** The PMU will put in place a monitoring mechanism. Partnership with CBOs and consultations with communities will be integral to the reconstruction/ construction work particularly the bridges, slope protection works and river bank protection works.

7. **Project Management Consultants:** PMU will hire consultants using pre-agreed Terms of References, for:

- Technical Support and Advise
- Financial/Procurement Management and Project Audit
- Independent External Environmental and Social Audit (IEESA)

- Developing the GIS based reporting and monitoring system
- Result monitoring and impact evaluation, etc.

6.3 Monitoring and Evaluation

8. **Monitoring and Evaluation (ME):** Concurrent Monitoring and Evaluation (ME) would be carried out by the PMU with oversight from the Core Committee of the state. The assignment could be outsourced and will have periodic monitoring. The monitoring will incorporate both qualitative and quantitative analysis and will also be used as a course correction if necessary.

9. The PMU will have the overall responsibility for project implementation including, but not limited to, reporting, monitoring and evaluation, procurement control, financial management, audit and disbursements, compliance with the environmental and social policy requirements, as well as coordination with the line agencies and the World Bank. Within the PMU, full time Environment Manager and Social Managers will be deployed to handle all matters pertaining to environment and social management under the project, including implementing the ESMF. These Environment Manager and Social Managers will be available for the entire project life.

10. The key responsibilities of the Environment and Social Managers include: (a) orientation and training of implementing agency teams and the contractors on environmental and social management, (b) leading/ providing oversight on the EA/SA process and its outputs, (d) review of monitoring reports submitted by the implementing agencies on ESMF/EMP implementation, (d) conducting regular visits to project sites to review ESMF compliance during sub-project planning, design and execution, (e) providing guidance and inputs to the implementing agency teams on environment and social management aspects. These Managers will also deal with matters pertaining to integration of ESMF into the sub-project design and contract documents; preparation of Terms of References for studies (such as for EA/SA); reporting, documentation, monitoring and evaluation on environment and social aspects and will ensure overall coordination with the Implementing Agencies and PIUs and PMU. The representative offices of the PMU at the district and block level will support the Environment and Social Managers in carrying out the responsibilities listed above. The Environment and Social Managers of the PMU will be supported by full time Environment and Social Experts positioned in the PIUs. These Environment and Social Experts will be available for the entire project life.

11. Further to the support the Environment and Social Managers, an 'Independent External Environmental and Social Audit' (IEESA) consultant will review the implementation of various EMP / RAP activities by all the sub-projects. In addition to providing regular inputs on improving the safeguard implementation practices in the project, the ISA will submit half-yearly reports to PMU, which will be an important resource for Bank team's assessment on safeguards management of the project.

12. Social and Environmental Monitoring: This will comprise of the following sets of activities:

a) Monitoring compliance with environmental regulations, social safeguards and Environmental and Social Assessment provisions
b) Continuous Social Impact Monitoring at the Community Levels
c) Independent External Environmental and Social Audit (IEESA)

d) Overall State-Level Monitoring and Oversight of Social Issues at state/project levels.

6.4 Training and Capacity Building

13. The UDRP-AF staff will need to have awareness, sensitivity, skills and experience regarding the environmental and social aspects of sub-projects planning and implementation. For sustainability and seamless adaption of the environmental and social principles and safeguards by all the implementing partners, awareness creation and capacity building becomes necessary. This capacity building and IEC strategy has been outlined as part of the ESMF program developed for the project aims at building environmental and social awareness and environmental and social management capacity in the project administration structure as well as in the intended target communities. Capacity building for environmental and social management will be integrated with overall capacity building component of the project.

14. The objectives of the capacity building initiatives are:

- To build and strengthen the capability of UDRP staff, participating departments, and other partners to integrate sound environmental and social management into sub-project implementation.
- To orient the UDRP staff, participating departments and IAs at district level and communities to the requirements of the project's ESMF.

15. Systematic capacity building initiatives need to be introduced only after completion of training needs assessment. The training should be of cascade mode. All the trained staff and others will in turn conduct further trainings at district, block and village levels. However, since capacity building goes beyond mere imparting training, institutionalization of best practices becomes a prerequisite for improved sub-project environmental and social management. The training outcomes like trainees' understanding of the training content, achievement of learning objectives, application of methods, tools and techniques learnt during training, etc. need to be monitored and audited. This will be done by the monitoring consultants.

16. In view of the specialized training and capacity building envisaged under the ESMF of the project, it is necessary to identify nodal training institutes that will work closely with PMU for conceptualizing, designing, conducting and managing training programs on the ESMF. Some such specialized institutions are:

- Selected Expert Staff of Participating Departments
- Selected Expert Staff of Disaster Management Department, Environment and Forest Department, Mines and Geology Department, etc.
- Indian Institute of Technology, Roorkee
- Uttarakhand State Pollution Control Board
- Engineering Staff College of India, Hyderabad
- Other Identified Consultants

17. The details of the proposed training programs are as below:

- Orientation/ Learning Training Programs
- Training on the ESMF and Mitigation Plans

- Training on Environmental and Social Management
- Workshops on ESMF

18. The likely participants are key officials of the project, PMU staff, PIUs and DPIUs staff, Participating Departments' staff, IAs and State Level Environmental and Social Specialist, District level Environment and Social Experts, Resource Persons, GP Representatives, Community Representatives, CSOs, CBOs, Women Groups, etc. About 20 to 30 trainees would participate in each of the training programs. It is intended that these trained persons will in turn provide onsite training to Participating Departments' Staff, IAs, Resource Persons, GP Representatives, Community Representatives, CSOs, CBOs, Women Groups, etc. on site at district/ block level.

19. The total estimated cost of training on environmental and social management for members of UDRP-AF, PMU, PIU, DPIUs, Participating Departments' Staff, IAs, etc, under the proposed project is presented in the table below:

Table 25: Training Budget

S. No.	Training	No. of Programs	Estimated Unit Cost in Rs.	Total Cost In Rs.
1	Orientation/ Learning Training Programs	10	1,00,000	10,00,000
2	Training on the ESMF and Mitigation Plans	5	1,00,000	5,00,000
3	Training on Environmental and Social Management	2	10,00,000	20,00,000
4	Workshops (State)	5	2,00,000	10,00,000
5	Workshops (District)	10	1,00,000	10,00,000
6	Provision for travel, allowance, other training expenses, etc.			25,00,000
7	Total			80,00,000

6.5 ESMF Budget

The total administrative budget for environmental and social management activities under the UDRP-AF has been worked out as Rs. 3.85 Crores. The cost of implementing the proposed mitigation measures is not included in this costing. The cost of mitigating environmental and social impacts need to be included in the respective sub-projects' budgets. The detailed breakup of the administrative budget is presented in the table below.

Table 26: Administrative budget for ESMF activities

S No.	Activity	Amount in Rs.
1	Training and workshops (as estimated)	**80,00,000**
2	Community Mobilization Staff Costs (lump sum)	**10,00,000**
3	Half-Yearly Independent External Environmental and Social Audit by	**2,50,00,000**

	Independent Consultants for 5 Years @ Rs. 50 Lakhs per year	
4	Preparation of specific environment and social related community awareness materials (lumpsum)	**10,00,000**
5	Sub Total	**3,50,00,000**
6	Contingencies @ 10%	**35,00,000**
7	**Total**	**3,85,00,000**
	Say	**I.Rs. 3.85 Crores**

7. Environment Impact Mitigation Plan - Guidance

7.1 Introduction

1. This guidance includes a generic Environment Impact Mitigation Plan (EMP) listing mitigation measures for the possible impacts caused by the sub-projects under UDRP. This also includes the project phase, where each of the mitigation measures needs to be considered and also indicates the implementation responsibility. The use of Environmental Codes of Practice (ECoPs) for various stages in the sub-projects for village roads for management of environmental and social impacts already being used in the PMGSY program being supported by the World Bank becomes mandatory since the unit operations of the project are the same as PMGSY. These are annexed to this report.

7.2 How to use this Guidance

7.2.1 For E1 sub-projects

2. This category of sub-projects requires a full-fledged EA that is to be done by environmental consultants separate from the design consultants. The impacts and mitigation measures given in this section should be used to identify the key/ important issues. The relevant management measures must then be integrated into the bid/contract documents. This would be confirmed by the PMU to the Bank for such sub-projects.

7.2.2 For E2 sub-projects

3. For this category of sub-projects, the design consultants have to prepare an EMP. This mitigation measures section should be referred to develop the EMP by the design consultants to prepare a table of mitigation measures in the sub-project EMP. The PIU would ensure that relevant mitigation measures are implemented as sub-projects go into implementation.

7.3 Budget

4. The budget for complying with the EMP needs to be worked out for each sub-project by working out the cost of implementing each EMP mitigation measure. Where this is not possible, provision of a minimum of 2% of the sub-project cost needs to be earmarked for complying with the EMP.

Table 27: Environment Impact Mitigation Plan – Guidance

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
1	Utility Relocation and common property resources	In case of utilities and common property resources being impacted due to the project, they will be relocated with prior approval of the concerned agencies before construction starts, on any sub-section of the project road. The relocation site identification will be in accordance with the choice of the community.	Pre-construction	Contractor, PIU, DPIU
2	Relocation of Cultural Property	In case there is an impact on cultural properties, they will be relocated at suitable locations, as desired by the community before construction starts. Local Community meetings, will be held to discuss relocation aspects, siting of structures etc.	Pre-construction	Contractor, PIU, DPIU
3	Site clearance	Site clearance will be done only in the area required for the sub-project.	Pre-construction	Contractor, PIU, DPIU
4	Tree Cutting	Trees will generally not be removed unless they are a safety hazard. Removal of trees shall be done only after the permissions / approvals are obtained. Disposal of cut trees is to be done immediately to ensure that the traffic movement is not disrupted.	Pre-construction	Contractor, PIU, DPIU
5	Debris disposal site identification	Site for temporary storage and disposal of debris refuse to be identified. These disposal sites shall be finalized such that they are not located within any designated forest or other eco-sensitive areas, does not impact natural drainage courses and no endangered / rare flora is impacted by such disposal. Pre-designated sites for disposal by PMU could be used with prior permission from PMU.	Pre-Construction	Contractor, PIU, DPIU
6	Joint Field Verification	The Engineer and the Contractor will carry out joint field verification of the EMP. The efficacy of the mitigation measures suggested in the EMP will be checked.	Pre-Construction	Contractor/ PIU, DPIU, Social and Environmental Managers and Experts
7	Modification of the Contract Documents	If required, the Engineer will modify the EMP and Contract documents (particularly the BOQs).	Pre-construction	PIU, DPIU, Contractor, Design Consultant, Social and Environmental Managers and Experts

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
8	Crushers, Hot-mix plants, Drum-mix plants & Batching Plants	Specifications hot mix plants and batching plants (existing or new) will comply with the requirements of the relevant national, state and local pollution control requirements. Hot mix plants and batching plants will be sited sufficiently away from habitation, agricultural operations or industrial establishments. Such plants will be located at least 1000m away from the nearest habitation, preferably in the downwind direction.	Pre-Construction	Contractor, PIU, DPIU
9	Other Construction Vehicles, Equipment and Machinery	The discharge standards promulgated under the Environment Protection Act, 1986 will be strictly adhered to. All vehicles, equipment and machinery to be procured for construction will conform to the relevant Bureau of Indian Standard (BIS) norms. Noise limits for construction equipment to be procured such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws will not exceed 75 dB (A), measured at one meter from the edge of the equipment in free field, as specified in the Environment (Protection) Rules, 1986.	Pre-Construction	Contractor, PIU, DPIU
10	Material sourcing (sand, borrow material and stone material)	Procurement of construction material only from permitted sites and licensed / authorized quarries. Farm land and forest belts shall not be used for material sourcing or borrow sites. Arable land shall not be selected as borrow sites as much as possible. If excavation has to be done in arable land, top soil layer (30 cm) shall be saved and returned after construction work is completed, so as to minimize impacts.	Pre-Construction	Contractor , PIU, DPIU
11	Quarries	The Contractor will identify materials from existing licensed quarries with the suitable materials for construction. Apart from approval of the quality of the quarry materials, the Engineer's representative will verify the legal status of the quarry operation. The quarry operations will be undertaken within the rules and regulations in force.	Pre-Construction	Contractor
12	Water	The Contractor will be responsible for arranging adequate supply of water for the entire construction period. The contractor shall consult the local people before finalizing the locations. The contractor will preferentially source all water requirements from surface water bodies. The contractor will be allowed to pump only from the surface water bodies. Boring of any tube wells will be prohibited. Any groundwater to be extracted requires permission from PIU/ DPIU and Department of Mines and Geology. The contractor will minimize wastage of water during construction.	Pre-construction	Contractor

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
13	Sand	The contractor will identify sand quarries with requisite approvals for the extraction of sand.	Pre-construction	Contractor
14	Labour Requirements	The contractor will use unskilled labour drawn from local communities to avoid any additional stress on the existing facilities (medical services, power, water supply, etc.) Planning of labour camps, if required, needs to be done to ensure adequate water supply, sanitation and drainage etc., in conformity with the Indian Labour Laws.	Mobilization	Contractor
15	Generation of Debris from dismantling of pavement structures	Debris generated due to the dismantling of the existing pavement structure shall be suitably reused in the proposed construction, subject to the suitability of the material and the approval of the Engineer. The contractor shall suitably dispose unutilized debris material; either through filling up of borrows areas created for the project or at pre-designated dump locations, subject to the approval of the Engineer. Debris generated from pile driving or other construction activities shall be disposed such that it does not flow into the surface water bodies or form mud puddles in the area. Dumping sites shall be identified by the contractor as per regulations in force. The identified locations will be reported to the Engineer.	Construction	Contractor, PIU, DPIU
16	Bituminous wastes disposal	The disposal of residual bituminous wastes will be done by the contractor at secure landfill sites, with the requisite approvals for the same from the concerned government agencies.	Construction	Contractor, PIU, DPIU
17	Non-bituminous construction wastes disposal	Location of disposal sites will be finalized prior to completion of the earthworks on any particular section of the road. The Engineer shall approve these disposal sites conforming to the following (a) These are not located within designated forest areas. (b) The dumping does not impact natural drainage courses (c) No endangered/rare flora is impacted by such dumping. (d) Settlements are located at least 1.0km away from the site. (e) Not located 1 Km within any mangrove vegetation/ecologically sensitive areas.	Construction	Contractor, PIU, DPIU
18	Stripping, stocking and preservation of top soil	The topsoil from borrow areas, areas of cutting and areas to be permanently covered will be stripped to a specified depth of 150mm and stored in stockpiles. At least 10% of the temporarily acquired area will be earmarked for storing topsoil. The stockpile will be designed such that the slope does not exceed 1:2 (vertical to horizontal), and the height of the pile is to be restricted to 2m. Stockpiles will not be surcharged or otherwise loaded and multiple handling will be kept to a minimum to ensure that no compaction will occur. The stockpiles will be covered with gunny bags or tarpaulin. It will be ensured by	Construction	Contractor, PIU, DPIU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
		the contractor that the topsoil will not be unnecessarily trafficked either before stripping or when in stockpiles. Such stockpiled topsoil will be returned to cover the disturbed area and cut slopes. The management of topsoil shall be reported regularly to the Engineer.		
19	Blasting	Except as may be provided in the contract or ordered or authorized by the Engineer, the Contractor will not use explosives. Where the use of explosives is so provided or ordered or authorized, the Contractor will comply with the requirements of the regulations in force besides the law of the land as applicable. The Contractor will at all times take every possible precaution and will comply with appropriate laws and regulations relating to the importation, handling, transportation, storage and use of explosives and will, at all times when engaged in blasting operations, post sufficient warning flagmen, to the full satisfaction of the Engineer. The Contractor will at all times make full liaison with and inform well in advance and obtain such permission as is required from all Government Authorities, public bodies and private parties whomsoever concerned or affected or likely to be concerned or affected by blasting operations. Blasting will be carried out only with permission of the Engineer. All the statutory laws, regulations, rules etc., pertaining to acquisition, transport, storage, handling and use of explosives will be strictly followed. Blasting will be carried out during fixed hours (preferably during mid-day), as permitted by the Engineer. The timing should be made known to all the people within 1000m (200m for pre-splitting) from the blasting site in all directions.	Construction	Contractor, PIU, DPIU
20	Transporting Construction Materials	All vehicles delivering materials to the site will be covered to avoid spillage of materials. All existing highways and roads used by vehicles of the contractor, or any of his sub -contractor or suppliers of materials or plant and similarly roads which are part of the works will be kept clean and clear of all dust/mud or other extraneous materials dropped by such vehicles. The unloading of materials at construction sites close to settlements will be restricted to daytime only.	Construction	Contractor, PIU, DPIU
21	Planning Traffic Diversions & Detours	Temporary diversions will be constructed with the approval of the Engineer. Detailed Traffic Control Plans will be prepared and submitted to the Engineer for approval, 5 days prior to commencement of works on any section of road. The traffic control plans shall contain details of temporary diversions, details of arrangements for construction under	Construction	Contractor, PIU, DPIU, Social and Environmental Managers and

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
		traffic, details of traffic arrangement after cessation of work each day, safety measures for transport of hazardous material and arrangement of flagmen. Environmental personnel of the Engineer will assess the environmental impacts associated as the loss of vegetation, productive lands and the arrangement for temporary diversion of the land prior to the finalization of diversions and detours. Special consideration will be given to the preparation of the traffic control plan for safety of pedestrians and workers at night. The Contractor will ensure that the diversion/detour is always maintained in running condition, particularly during the monsoon to avoid disruption to traffic flow. He shall inform local community of changes to traffic routes, conditions and pedestrian access arrangements. The temporary traffic detours will be kept free of dust by frequent application of water.		Experts
22	Infrastructure provisions at construction camps	The Contractor during the progress of work will provide, erect and maintain necessary (temporary) living accommodation and ancillary facilities for labour to standards and scales approved by the Engineer. There shall be provided within the precincts of every workplace, latrines and urinals in an accessible place, and the accommodation, separately for each for these, as per standards set by the Building and other Construction Workers (regulation of Employment and Conditions of Service) Act, 1996. Except in workplaces provided with water-flushed latrines connected with a water borne sewage system, all latrines shall be provided with dry-earth system (receptacles) which shall be cleaned at least four times daily and at least twice during working hours and kept in a strict sanitary condition. Receptacles shall be tarred inside and outside at least once a year. If women are employed, separate latrines and urinals, screened from those for men (and marked in the vernacular) shall be provided. There shall be adequate supply of water, close to latrines and urinals. All temporary accommodation must be constructed and maintained in such a fashion that uncontaminated water is available for drinking, cooking and washing. The sewage system for the camp must be designed, built and operated so that no health hazard occurs and no pollution to the air, ground or adjacent watercourses takes place. Compliance with the relevant legislation must be strictly adhered to. Garbage bins must be provided in the camp, shall be regularly emptied and the garbage disposed in a hygienic manner.	Construction	Contractor, PIU, DPIU, Social and Environmental Managers and Experts

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
		Construction camps are to be sited at least 1000m away from the nearest habitation and adequate health care is to be provided for the work force. Unless otherwise arranged for by the local sanitary authority, arrangement for disposal of excreta by putting a layer of night soils at the bottom of a permanent tank prepared for the purpose shall be taken up by the contractor. It should be covered with 15 cm layer of waste or refuse and then with a layer of earth for a fortnight (by then it will turn into manure).		
23	Operation of construction equipments and vehicles	All vehicles and equipment used for construction will be fitted with exhaust silencers. During routine servicing operations, the effectiveness of exhaust silencers will be checked and if found to be defective will be replaced. Noise limits for construction equipment used in this project (measured at one meter from the edge of the equipment in free field) such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws will not exceed 75 dB(A), as specified in the Environment (Protection) Rules, 1986 Notwithstanding any other conditions of contract, noise level from any item of plant(s) must comply with the relevant legislation for levels of noise emission. The contractor will ensure that the AAQ concentrations at these construction sites are within the acceptable limits of industrial uses in case of hot mix plants and crushers and residential uses around construction camps. Dust screening vegetation will be planted on the edge of the RoW for crushers. Monitoring of the exhaust gases and noise levels will be carried out by the agency identified for Environmental Monitoring for the project.	Construction	Contractor, PIU, DPIU
24	Material Handling at Site	All workers employed on mixing asphaltic material, cement, lime mortars, concrete etc., will be provided with protective footwear and protective goggles. Workers, who are engaged in welding works, would be provided with welder's protective eye-shields. Workers, engaged in stone breaking activities will be provided with protective goggles and clothing and will be seated at sufficiently safe intervals. The use of any herbicide or other toxic chemical will be strictly in accordance with the manufacturer's instructions. The Engineer will be given at least 6 working days' notice of the proposed use of any herbicide or toxic chemical. A register of all herbicides and other toxic chemicals delivered to the site will be kept and maintained up to date by the Contractor. The register will include the trade name, physical properties and	Construction	Contractor, PIU, DPIU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
		characteristics, chemical ingredients, health and safety hazard information, safe handling and storage procedures, and emergency and first aid procedures for the product. No man below the age of 14 years and no woman will be employed on the work of painting with products containing lead in any form. No paint containing lead or lead products will be used except in the form of paste or readymade paint. Face masks will be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.		
25	Precautionary/Safety Measures During Construction	All relevant provisions of the Factories Act, 1948 and the Building and other Construction Workers (regulation of Employment and Conditions of Service) Act, 1996 will be adhered to. Adequate safety measures for workers during handling of materials at site will be taken up. The contractor has to comply with all regulations regarding safe scaffolding, ladders, working platforms, gangway, stairwells, excavations, trenches and safe means of entry and egress.	Construction	Contractor, PIU, DPIU
26	Protection of Religious Structures and Shrines	All necessary and adequate care shall be taken to minimize impact on cultural properties (which includes cultural sites and remains, places of worship including temples, mosques, churches and shrines, etc., graveyards, monuments and any other important structures as identified during design and all properties/sites/remains notified under the Ancient Sites and Remains Act). No work shall spillover to these properties, premises and precincts. Access to such properties from the road shall be maintained clear and clean.	Construction	Contractor, PIU, DPIU
27	Dust contamination at construction sites and along the roads	Unpaved haul roads near/passing through residential and commercial areas to be watered thrice a day. Trucks carrying construction material to be adequately covered. All earthwork will be protected in a manner acceptable to the Engineer to minimize generation of dust. The contractor will take every precaution to reduce the level of dust along construction sites involving earthworks, by frequent application of water.	Construction	Contractor, PIU, DPIU
28	Earth work Excavations	Ensure unobstructed natural drainage through proper drainage channels/structures. Dispose surplus excavated earth at identified sites. Ensure minimum hindrance to normal local activities and business. Avoid damage to permanent structures. All excavations will be done in such a manner that the suitable materials available from excavation are satisfactorily utilized as decided upon beforehand. The excavations shall conform to the	Construction	Contractor, PIU, DPIU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
		lines, grades, side slopes and levels shown in the drawings or as directed by the engineer. While planning or executing excavation the contractor shall take all adequate precautions against soil erosion, water pollution etc and take appropriate drainage measures to keep the site free of water, through use of mulches, grasses, slope drains and other devices. The contractor shall take adequate protective measures to see that excavation operations do not affect or damage adjoining structures and water bodies. For safety precautions guidance may be taken from IS:3764.		
29	Earth fill	Embankment and other fill areas, unless otherwise permitted by the Engineer, be constructed evenly over their full width and the contractor will control and direct movement of construction vehicles and machinery over them	Construction	Contractor, PIU, DPIU
30	Slope protection and control of erosion	Embankments and other areas of unsupported fill will not be constructed with steeper side slopes, or to greater widths than those shown in design drawings. While planning or executing excavations the Contractor will take all adequate precautions against soil erosion as per regulations. Turfing on critical road embankment slopes with grass sods, in accordance with the recommended practice for treatment of embankment slopes for erosion control. The work will be taken up as soon as possible provided the season is favorable for the establishment of sods. Other measures of slope stabilization will include mulching, netting and seeding of batters and drains immediately on completion of earthworks. Dry stone pitching for apron and revetment will be provided for bridges and cross drainage structures.	Construction	Contractor, PIU, DPIU
31	Drainage requirements at construction sites	In addition to the design requirements, the contractor will take all desired measures as directed by the Engineer such measures to prevent temporary or permanent flooding of the site or any adjacent area.	Construction	Contractor, PIU, DPIU
32	Contamination of soil	Vehicle/machinery and equipment operation, maintenance and refueling will be carried out in such a fashion that spillage of fuels and lubricants does not contaminate the ground. Oil interceptors will be provided for vehicle parking, wash down and refueling areas within the construction camps. Fuel storage will be in proper bunded areas. All spills and collected petroleum products will be disposed in accordance with MoEF and SPCB guidelines. Fuel storage and refilling areas will be located at least 1000m from rivers and irrigation	Construction	Contractor, PIU, DPIU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
		ponds or as directed by the Engineer. In all fuel storage and refueling areas, if located on agricultural land or areas supporting vegetation, the topsoil will be stripped, stockpiled and returned after cessation of such storage and refueling activities.		
33	Compaction of soil	To minimize soil compaction construction vehicle, machinery and equipment will move or be stationed in designated area (RoW or CoI, haul roads as applicable) only. The haul roads for construction materials should be routed to avoid agricultural areas.	Construction	Contractor, PIU, DPIU
34	Silting, Contamination of Water bodies	Silt fencing will be provided around stockpiles at the construction sites close to water bodies. The fencing needs to be provided prior to commencement of earthworks and continue till the stabilization of the embankment slopes, on the particular sub-section of the road. Construction materials containing fine particles will be stored in an enclosure such that sediment-laden water does not drain into nearby watercourses. All discharge standards promulgated under Environmental Protection Act, 1986, will be adhered to. All liquid wastes generated from the site will be disposed as acceptable to the Engineer.	Construction	Contractor, PIU, DPIU
35	Cutting/Filling of Surface water bodies	Earth works shall be undertaken such that the existing embankments of water bodies are not disturbed. In case of cutting of embankments, the same shall be reconstructed with appropriate slope protection measures and adequate erosion control measures. Filling of surface water bodies will be compensated by digging an equal volume of soil for water storage. Such dug-up soil will be used for spreading as topsoil. Wherever digging is undertaken, the banks will be protected as designed or as approved by the Engineer. The excavation will be carried out in a manner so that the side slopes are no steeper than 1 vertical to 4 horizontal, otherwise slope protection work, as approved by the Engineer will be provided. As far as practicable, and as approved by the Engineer, excavation for replacement of water bodies will be at the closest possible place/location, with respect to the original water body or part thereof consumed by filling.	Construction	Contractor, PIU, DPIU
36	Sub-Base & Base	The contractor will take all necessary measures/ precautions to ensure that the execution of works and all associated operations are carried out in conformity with statutory and regulatory environmental requirements. The contractor will plan and provide for remedial measures to be implemented in event of occurrence of emergencies such as spillage of oil or bitumen or chemicals. The contractor will provide the Engineer with a statement of measures that he intends to implement in event of such an emergency, which will include a statement of how he intends to adequately train personnel to	Construction	Contractor, PIU, DPIU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
		implement such measures. Adequate safety measures for workers during handling of materials at site will be taken up. The contractor will take every precaution to reduce the level of dust along construction sites by frequent application of water as per regulations. Noise levels from all vehicles and equipment used for construction will conform to standards as specified. Construction activities involving equipment with high noise levels will be restricted to the daytime. Transport of materials for construction will be as specified. The contractor will provide for all safety measures during construction as per regulations in force.		
37	Surfacing	The contractor will take all necessary means to ensure that all surfacing works and all associated operations are carried out in conformity with regulations. All workers employed on mixing asphaltic material etc. will be provided with protective footwear as specified. Noise levels from all vehicles and equipment used for surfacing will conform to standards as specified. Construction activities involving equipment with high noise levels will be restricted to the daytime. Transport of materials for construction will be as specified. The contractor will provide for all safety measures during construction as per regulations in force.	Construction	Contractor, PIU, DPIU
38	Mitigation Measures for Noise Sensitive Receptors	Noisy construction operations in residential and sensitive areas (hospitals, schools and religious places) should be restricted between 7.30 a.m. to 6.00 p.m. Preventive maintenance of construction equipment and vehicles would be done to meet emission standards and to keep them with low noise. Provision of ear plugs to operators of heavy machinery and workers in near vicinity. During night, material transport should be uniformly distributed to minimize noise impacts.	Construction	Contractor, PIU, DPIU
39	Disposal of construction debris	Daily inspection at haul roads and sites for construction debris for safe collection and disposal to land fill sites. Collection and disposal of refuse. Minimize construction debris by balancing cut and fill requirements, if relevant.	Construction	Contractor, PIU, DPIU
40	Adjoining water bodies	Provide slope protection works of water bodies, if any, abutting the road.	Construction	Contractor, PIU, DPIU
41	Bridge Works & Culverts	While working across or close to the rivers, avoid obstructing the flow of water. If an obstruction is required, to serve notice on the downstream users of water sufficiently in advance. Construction over and close to the non-perennial streams will be undertaken in	Construction	Contractor, PIU, DPIU

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
		the dry session. Construction work expected to disrupt users and impacting community water bodies will be taken up after serving notice on the local community. Dry stone pitching for apron and revetment will be provided for bridges and cross drainage structures, if necessary.		
42	Safety practices during construction	The Contractor is required to comply with all the precautions as required for the safety of the workers as per the International Labour Organization (ILO) Convention No. 62 as far as those are applicable to this contract. The contractor will supply all necessary safety appliances such as safety goggles, helmets, masks, etc., to the workers and staff. The contractor has to comply with all regulation regarding, working platforms, excavations, trenches and safe means of entry and egress.	Construction	Contractor , PIU, DPIU
43	Social disruptions	Minimize interruptions to utility services through proper planning and scheduling of activities and inter-departmental co-ordination. Construction of temporary road/access and diversion of traffic.	Construction	Contractor , PIU, DPIU
44	Aesthetic impairment	Aesthetic enhancement through proper housekeeping of construction sites. Disposal of construction wastes at the approved disposal sites. Immediate closure of the trenches after pipe laying/ completion of work. Complete construction activity by removing all temporary structures, restoring the sub-project and surrounding areas as near as possible to the pre-construction condition.	Construction	Contractor, PIU, DPIU
45	Tree plantation	Trees felled will be replaced as per the compensatory afforestation criteria in accordance with the Forest (Conservation) Act, 1980. Two trees will be planted for every tree lost along the sub-project roads in locations to be identified with support from the PIU.	Construction	Contractor, PMU, Forest Dept.
46	Risk of accidents	In order to guarantee construction safety, efficient lighting and safety signs shall be installed on temporary roads during construction and adequate traffic regulations shall be adopted and implemented for temporary roads.	Construction	Contractor, PIU, DPIU
47	Traffic and Transportation	Adequate actions to direct and regulate traffic shall be taken in consultation with PIU/ DPIU/ Traffic Police to prevent jamming roads during construction period. While planning alternative routes, care to be taken to minimize congestion and negative impacts at sensitive receptors such as schools and hospitals. Traffic controls and diversions marked with signs, lights and other measures (flags) should be provided. Prior to creating diversions and detours the citizens should be consulted well in advance	Construction	Contractor, PIU, DPIU, Traffic Police

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
		through citizen's meetings. It should be an informed decision taken through public participation. Diversion works to be dismantled to restore the area to original condition after completion of construction.		
48	Cultural relics / Chance finds	If fossils, coins, articles of value or antiquity, structures, and their remains of geologic or archaeological interest are found, local government shall be immediately informed of such discovery and excavation shall be stopped until identification of cultural relics by the authorized institution and clearance is given for proceeding with work. All the above discovered on site shall be the property of the Government, and shall be dealt with as per provisions of the relevant legislation. The contractor shall take reasonable precaution to prevent his workmen or any other persons from removing and damaging any such article or thing. He shall, immediately upon discovery thereof and before removal acquaint the Engineer of such discovery and carry out the Engineer's instructions for dealing with the same, awaiting which all work shall be stopped. The Engineer shall seek direction from the Archaeological Society of India (ASI) before instructing the Contractor to recommence work on the site.	Construction	Contractor, PIU, DPIU
49	Monitoring Environmental Conditions	The contractor will undertake seasonal monitoring of air, water, noise and soil quality through an approved monitoring agency. The parameters to be monitored, frequency and duration of monitoring as well as the locations to be monitored will be as per the Monitoring Plan prepared.	Construction	Contractor, SPCB, Social and Environmental Managers and Experts
50	Clearing of Construction of Camps & Restoration	Contractor to prepare site restoration plans for approval by the Engineer. The plan is to be implemented by the contractor prior to demobilization. On completion of the works, all temporary structures will be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, at the Contractor's expense, to the entire satisfaction of the Engineer. Residual topsoil will be distributed on adjoining/proximate barren/rocky areas as identified by the Engineer in a layer of thickness of 75mm - 150mm.	De-mobilization	Contractor, PIU, DPIU
51	Monitoring Operational	The PIU will monitor the operational performance of the various mitigation measures carried out as a part of sub-project. The indicators selected for monitoring include the	Operation	PIU, DPIU, Social and Environmental

S. No.	Issues / Impacts	Mitigation Measures	Project Phase	Responsibility
	Performance	survival rate of trees, water bodies, status of rehabilitation of borrow areas and utility of double glazing for noise sensitive receptors.		Managers and Experts
52	Orientation of implementing agency and contractors	The PIU shall organize orientation sessions during all stages of the project. The orientation session shall involve all staff of DPIU and field level implementation staff of Contractor. The contractor needs to comply with the World Bank's Environmental, Health, and Safety Guidelines.	Pre-Construction & Construction	Social and Environmental Managers and Experts, PIU, DPIU
53	Handling of flora/fauna found in project sites	The Contractor shall train the workers to handle any accidental finds of important species of flora and/or flora and on the procedures to be followed to intimate the Forest Department, and PIU	Pre-Construction & Construction	Contractor, PIU, PMU, Forest Department
54	Handling of Natural Habitats and Biodiversity Issues	The PMU and PIUs and DPIUs will ensure that sub-project planning, preparation, implementation and operation and maintenance will follow the ECoPs given under PMGSY. These are annexed to this report.	Pre-Construction & Construction	Contractor, PIU, PMU, Forest Department

8. Resettlement Policy Framework

8.1 Introduction

1. This Resettlement Policy Framework for UDRP-AF is drawn in accordance with the World Bank's Safeguard Policy on Involuntary resettlement (OP 4.12). The framework comprises of the following sections:

- Objectives of RPF
- Project Components Requiring Land Under Different Tenures
- Requirement of Land – acquisition of private land and transfer of public land under different tenureship
- Usual Practice in Uttarakhand
- Options for UDRP-AF
- Social Impact, Mitigation, Eligibility Criteria and Entitlement (as set out in section 5.5)
- Entitlement Matrix
- Process of Social Impact Assessment including census socio-economic survey
- Categories of Project Affected Families
- Legal Framework (as described in detail in earlier chapter)
- Grievance Redress
- Consultation and Participation

2. The framework has been developed based on the following policies/ legislations:

- **The Right to Fair Compensation and Transparancy in Land Acqisition and Rehabilitaton and Resettlement Act 2013**

3. This framework will act as guide for mitigating the social impacts that would be triggered by the sub-projects under UDRP-AF.

8.1.1 Objective of RPF

4. The primary objective of this RPF is to provide better standard of living to the project affected persons or at least restore their standard of living to that of before project. If the affected persons belong to Below Poverty Line (BPL) category before the project, then this RPF aims to bring them Above Poverty Line (APL). The other objectives of this RPF are to;

- Avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs.
- Assist displaced persons in improving their former living standards, income earning capacity, and production levels, or at least in restoring them.
- Encourage community participation in planning and implementing resettlement.

- Provide assistance to affected people regardless of the legality of land tenure.

5. The following guidelines will be followed during implementation:

- Compensation and Rehabilitation assistance will be paid before displacement.
- Compensation will be at replacement cost.
- No civil works will be initiated unless compensation for land and assets and rehabilitation assistance is provided to all eligible PAPs.
- Livelihood assistance will be given in form of Income Generation Assets (IGA) to be chosen by the PAPs.
- IA will provide information to the PAPs on alternative income generation activities suitable for the area and help them in making choices.
- The IA and PMU will monitor the provision of the IGA.
- The IA will monitor the performance of the IGA and report to PMU.

8.2 Land Requirement

6. UDRP-AF proposes various types of sub-projects to be taken up. These sub-projects will require land depending on their type and size. The land requirement would vary across sub-projects and locations. The type and size of the sub-projects dictate the land requirement. The extent of land required would vary across the sub-projects and can't be estimated at this stage.

8.3 Usual Practice

7. GoU is implementing similar projects on a regular basis, which require land, of which the ownership could be either public or private. Accessing public land is easier, but arrangements will have to be made for securing privately owned land. When additional lands are required, GoU, as a first step, would try and secure public lands under different tenure systems where feasible and available. If private lands are required, then GoU would resort to, either through voluntary donation or by outright direct purchase or through using RFCTLARAR Act.

8.4 Voluntary Donation

8. Wherever there is requirement of additional land for rural roads, the GoU has procured these lands through voluntary donations. As there is good demand for reasonable rural roads, housing and public buildings, many times the Gram Panchayat and the villages have come forward to donate any additional land. As the demand outstrips supply, cases of hindrance to rural roads construction for want of additional land were not heard. In the case of subcomponents under the present project, it is rather simple for the GoU, as the requirements are not only minimal but also that:

- almost all roads proposed will be existing roads (sometimes in badly damaged and not motor-able) and the project intervention will be restricted to

improving/strengthening the existing road which would mean land requirement will be nil or limited;
- most of these rural roads do have sufficient RoW; and
- in case, it becomes inevitable, the local communities will secure lands either through voluntary donations subject to fulfillment of certain conditions or outright purchase or acquisition using RTFCTLARAR Act.
- Very small land parcels, if any would be required for housing and public buildings in addition to government land.

9. With the immediate necessity of reconstructing these badly damaged roads, houses and other buildings and several benefits that are likely to accrue due to these roads, the villagers might remove any encroachments and even donate land if necessary. There may not be much of a problem in procuring/ acquiring the additional land required for project components in a dire necessity.

8.5 Options for UDRP-AF

10. However, keeping in mind any eventuality, the following options are proposed for procuring/ acquiring private lands:

- Voluntary Land Donation
- Land acquisition using **The Right to Fair Compensation and Transparancy in Land Acqisition and Resettlement and Rehabilitation Act 2013**
- **Direct Purchase**

8.5.1 Voluntary Land Donation

11. UDRP-AF will completely avoid or at least minimize land acquisition. Whenever there is additional land requirement, UDRP-AF will interact with the land owners and facilitate voluntary donation of land required for taking up sub-projects under the project. This use of voluntary donation option will be limited to small strips of land for rural roads and small plots of land for buildings. Under no circumstances, the titleholder/ encroacher will be subjected to any pressure, directly or indirectly, to part with the land. These actions are expected to minimize adverse impacts on the local population and help in project benefits reaching all sections of community.

12. UDRP-AF will ensure that the process of voluntary donation of land will be meticulously documented at all levels to avoid confusions, misunderstandings, litigations, etc. at a later stage. A format for this purpose is enclosed in the Annexures. This process will be taken up mainly at three levels as described below:

Table 28: Process of voluntary donation of land

Level	Process	Output	Responsibility
GP/ Village Level	Based on the revenue survey, lands will be identified and the list of titleholders/ encroachers will be prepared. This will be done by GP with the help of IA and GP	Willingness Letters	Sarpanch, GP, DPIU, GP Secretary, and

	Secretary. GP motivates the title holders and encroachers for voluntary land donation required for the project. The DPIU will help in this process and will document the willingness to donate land by the titleholders and encroachers in the presence of the Sarpanch and GP Secretary in the form of a Willingness Letter. The list of such persons will be displayed at the Gram Panchyat Office.		affected persons (Titleholder/ Encroachers)
Block Level	BDO or concerned Revenue Official surveys the land and demarcates the extent of area required. The survey will identify if the land is public, private or encroachment. Based on the survey, maps are prepared. The entire process will be carried out along with GP, DPIU, and GP Secretary. The maps will be signed by Sarpanch, GP Secretary, and concerned Revenue Officer.	Survey map signed by relevant persons indicating the extent of land required.	BDO, Surveyor, Sarpanch, GP Secretary, DPIU
District Level	Formalize relinquishment of land rights where concerned local people voluntarily donate their private land for the project for public purpose.	Effect Changes in Land Revenue Records	District Collector, BDO

13. Original copies of all documentation of voluntary donation of land will be kept with the Block Development Officer with copies at GP. Complete documentation along with a copy of the final document will be sent to PMU for records and for inspection at a later date. In order to make this process transparent, the following rules are prescribed:

- The Titleholder/ Encroacher should not belong to the vulnerable sections/ BPL category.
- Identification of vulnerable PAPs: The vulnerability shall be assessed by the project based on the census of the affected persons. The following categories of PAFs/ PAPs shall be entitled for support as vulnerable groups:
    - BPL households (with a valid proof), as per the State poverty line for rural areas;
    - BPL households without a proof of the same and belonging to the following social categories (i) Women headed households with women as sole earner (ii) Scheduled Caste/Scheduled Tribe and (iii) Handicapped person, and is subject to any of the following impacts;
        - Loses land holding,
        - Loses shelter and
        - Loses source of livelihood.
- The project provides for targeted support/ assistance to the vulnerable groups.
- The Titleholder/ Encroacher should be holding more than the minimum prescribed land, i.e., 1 hectare of wet land and 2 hectares of dry land after donation.
- The impacts must be minor. The voluntary donation should not be more than 10 percent of the area of that particular holding of the Titleholder/ Encroacher in that category of land (dry, wet or commercial/ residential). This should not require any physical relocation of the Titleholder/ Encroacher. The land donated should not be more than 1

acre in case of dry land, 0.5 acre in case of wet land and 0.25 acre in case of commercial/ residential.

- The land must be jointly identified by the GP, and DPIU and PMU Representative or other implementing agencies or project authorities. However the project technical authorities should ensure that the land is appropriate for sub-project purposes and that the sub-project will not invite any adverse social, health, environmental, safety, etc. related impacts by procuring this land.
- The land in question must be free of squatters, encroachers, or other claims or encumbrances.
- Buildings/structures on the land donated is not accepted as donation.
- Verification of the voluntary nature of land donations must be obtained from each of the persons donating land. This should be in the form of notarized witnessed statements.
- In case of any loss of income or physical displacement is envisaged, verification of voluntary acceptance of community devised migratory measures must be obtained from those expected to be adversely affected.
- The land title must be vested in the GP and appropriate guarantees of public access to services must be given by the private titleholder.
- The Titleholder/ Encroacher donating land should be provided access on priority basis, subject to eligibility, to the Government housing/ poverty reduction/ livelihoods/ etc. programs operating in the area.
- The Titleholder/ Encroacher donating land should made to understand that they will have equal access to the infrastructure built on the donated land like any other community member and that they cannot claim for any priority treatment.
- Grievance Redress Mechanism must be available.
- The donations and the process followed is documented, monitored and reflected in the monitoring reports.

8.5.2 Land Acquisition using The Right to Fair Compensation and Transparancy in Land Acqisition and Resettlement and Rehabilitation Act 2013

14. The land acquisition to be done under this project will be according to The Right to Fair Compensation and Transparancy in Land Acqisition and Resettlement and Rehabilitation Act 2013.

8.5.3 Direct Purchase

15. Enquiries reveal that GoU has experience of direct purchase of private lands for public purposes. Hence, this method can be adopted, on a willing seller and willing buyer basis, to avoid delays.

8.6 Compensation for Structures and other Assets

16. **Structures:** The compensation for structures includes market price of the assets to build/ procure a replacement asset, or to repair, if affected partially. In determining the

replacement cost, depreciation of the asset and the value of salvage materials are not taken into account. Compensation for trees, crops and other assets will be based on the replacement value using existing prices prepared by relevant agencies, taking into account their productivity and/or local market prices. An addition of 30% is made to the replacement value.

17. **Common Property Resources:** Grazing lands, places of worship, places of heritage value, burial grounds, water points, community wells, bore wells for drinking water, roads, path ways, community meeting places, wood lots, etc. are categorized under this heading. These resources will be restored to an acceptable level at an appropriate place as agreed with the community. Community will be fully involved in their replacement.

8.7 Categories of Project Affected People

18. GoU has implemented several projects similar to the sub-projects proposed under several externally aided projects in the past. From this experience, it is established that lands acquired will normally be rural agricultural lands. Residential and commercial lands may not be required to be acquired. In any case, project need not acquire any structures. Taking these into account, and given that a generic framework is being developed, following broad categories of Project Affected People (PAPs) are identified:

1. Titleholders
    a. Agricultural
    b. Residential
    c. Commercial
2. Encroachers/ Squatters with no valid title
    a. Agricultural
    b. Residential
    c. Commercial
3. Groups losing Livelihoods and/ or Access

8.7.1 Cut-Off Date

19. For preparing a list of PAPs, a Socio-economic survey of the affected families done during the planning phase of a sub-project. The list will be appended to the sub-project DPR. This date on which the socio-economic survey is conducted will serve as the cut-off date. No additions to this list will be made unless authorized with concrete proof by Project Director, PMU.

8.7.2 Identification of PAPs

20. UDRP proposed community participation through participation of Gram Panchayats, to shoulder some responsibilities such as identification of PAPs, mobilizing community for voluntary land donations, implementing RAPs (if any), and grievance redressal. The following process will be adopted to identify PAPs:

- GP identifies the affected area at the village level along with IA duly involving Gram Panchayat members, Panchayat Secretary, in identifying affected area.
- Once the land required is identified, it is classified as either government land or encroached land and/or private land based on ownership status
- GP with the Implementing Agency announces a cut-off date as the Base line Socio-Economic survey date for identification of affected people.
- GP identifies the encroachers and titleholders as per the ownership status with the help of community members.
- Based on this information arrive at the number of PAPs

21. A detailed census based socio-economic survey will be conducted and extensive consultations will be held with the project affected families, i.e. the land losers. Each target community will be identified and differentiated on the basis of their source and level of income. The survey will focus on land and various productive assets including wages. This information will be used to determine the nature and extent of livelihood support/assistance (over and above the provision made for compensation) required to restore adequate income levels. All these measures will be taken only after consulting the affected families and wider community. This approach will help the project in achieving its objective of ensuring that no affected household becomes poorer with the intervention.

8.7.3 Valuation of Structures and Assets

22. PMU or the concerned Department shall deploy its expert in civil engineering/ geology/ agriculture/ horticulture as required or alternatively hire the services of government approved valuer for valuation of structures and other immovable assets. The objective of this exercise is to establish the extent of loss and estimation of replacement cost. The major tasks are as follows:

1. Measurement of affected structure/ immovable assets
2. Establishing construction typology
3. Establishing extent of loss
4. Estimation of replacement cost

23. Measurement provides required information for valuation. For valuation the latest Schedules of Rates (SR) applicable to assets being valued need to be used. This SR provides the consolidated unit rates for permanent, semi-permanent and temporary construction. Details as to how such consolidated unit rates have been arrived at is also explained in the SR. Using the analysis as guide, the expert/ valuer can arrive at the compensation value of a structure/ asset. Various SRs also provides rates for hand pumps, dug-wells, tube wells etc including installation charges. Extent of loss would be determined primarily in terms of the portion of the structure affected. While calculating replacement cost the following principles need to be kept in mind:

- If a structure/ asset is affected 50% or more, then consider the whole structure as affected.
- Do not depreciate the cost of the structure/ asset for its age.
- Add 30% extra over and above the estimated cost to arrive at replacement value.

- Allow the PAPs to salvage and carry, for free, any materials for their use. Do include the cost of salvaged material in the replacement cost.

8.7.4 Entitlement Matrix

24. This Entitlement Matrix is developed giving various entitlements for all categories of PAPs, based on The Right to Fair Compensation and Transparancy in Land Acqisition and Resettlement and Rehabilitation Act 2013.. This Matrix can be used as a guide for designing Resettlement Action Plans for sub-projects. All the families will be entitled to two broad categories of assistance; 1) compensation for land loss; and 2) livelihood (rehabilitation) assistance for starting some income generation activity, which may include the purchase of lands, as decided by the PAF. The livelihood assistance in the matrix are rather indicative (as they are average figures), whereas, the actual assistance will relate to, at the minimum restoring, if not enhancing the pre-land loss income levels. It may also be noted that livelihood assistance figures have been worked out such as to yield an annual income of Rs 50,000 per family, an income level corresponding to the initial ladder of the Above Poverty Line. The amounts given in the Entitlement matrix are for the financial year 2013-14. After this year these amounts will be increased by 10% every year to compensate for inflation. Details related to the entitlements are presented in the matrix below.

Table 29: Entitlement Matrix

Impact Type	Entitled Entity	Entitlement based on The Right to Fair Compensation and Transparancy in Land Acqisition and Resettlement and Rehabilitation Act 2013.
1. Loss of Land (Titleholders)		
1A. Loss of Agricultural Land	Affected Family (Titleholder)	• Cash compensation at replacement cost as determined according to The Right to Fair Compensation and Transparancy in Land Acqisition and Resettlement and Rehabilitation Act 2013. or replacement of land if available. • If the residual plot is not viable and PAP becomes a marginal farmer, then any of the following three options are to be given to the PAP, subject to PAP's acceptance: o Acquire the required land and pay compensation and assistance for the same. o If PAP so wishes acquire the remaining portion of the plot and pay compensation and assistance for the entire plot including residual part. o If PAP is from vulnerable group, compensation for the entire land by means of land for land will be provided, if PAP wants so, provided that land of equal productive value is available. o If the land for land option is exercised, then an additional Rs. 50,000/- per acre will be paid for land preparation. o An amount of Rs. 25,000/- will be provided for each PAP towards building a cattle shed. • If the PAP wishes to buy land with the compensation amount, then an additional Rs. 50,000/- per acre will be paid for land preparation. • Subsistence Grant of Rs. 50,000/- • One time resettlement allowance of Rs. 50,000/- • All fees, stamp duties, taxes and other charges, as applicable under the relevant laws, incurred in the relocation and rehabilitation process, are to be borne by the IA.
1B. Loss of Residential/ Commercial land	Affected Family (Titleholder)	• Cash compensation at replacement cost as determined according to The Right to Fair Compensation and Transparancy in Land Acqisition and Resettlement and Rehabilitation Act 2013. or replacement of land if available. • Subsistence Grant of Rs. 50,000/- • One time resettlement allowance of Rs. 50,000/- • All fees, stamp duties, taxes and other charges, as applicable under the relevant laws, incurred in the relocation and rehabilitation process, are to be borne by the IA.

Impact Type	Entitled Entity	Entitlement based on The Right to Fair Compensation and Transparancy in Land Acqisition and Resettlement and Rehabilitation Act 2013.
2. Loss of Structures (Titleholders)		
2A. Loss of Residential Structures	Affected Family (Titleholder)	• Compensation of structure will be paid at the replacement cost to be calculated as per latest prevailing Basic Schedule of Rates (BSR) without depreciation. • Assistance of Rs. 30,000/- towards temporary accommodation or Rental assistance as per the prevalent rate in the form of grant to cover maximum six month rentals, whichever is higher. • Subsistence Grant of Rs. 50,000/- • Transportation assistance of Rs. 50,000/- • One time resettlement allowance of Rs. 50,000/- • Right to salvage material from demolished structure and frontage etc.
2B. Loss of Rental Accommodation (Residential/ Commercial	Tenants	• Rental assistance for both residential & commercial tenants: Assistance of Rs. 30,000/- towards temporary accommodation or Rental assistance as per the prevalent rate in the form of grant to cover maximum six month rentals, whichever is higher. • Additional structures erected by tenants will also be compensated separately directly to the tenants. • Transport/ Shifting assistance based on type of house and household assets, subject to a minimum of Rs. 50,000/-. • Any advance deposited by the tenants will be refunded from owners total compensation package to the tenant on submission of documentary evidence. • Right to salvage material from demolished structure and frontage etc. erected by tenants.
3. Loss of Structures Residential/ Commercial (Non-Titleholders)		
3A. Loss of Immovable and Pucca Structures (Residential/ Commercial)	Squatters/ Encroachers	• Squatters and Encroachers will be notified and given one month time to remove their assets or enough time to harvest their present crops. • Compensation for loss of structures at replacement cost. All asset/structures impacted will be compensated irrespective of the notice time. • Subsistence Grant of Rs. 50,000/- • Transport/ Shifting assistance of Rs. 50,000/-. • One time resettlement allowance of Rs. 50,000/- • For Squatters and Encroachers right to salvage material from the demolished structure.
4. Loss of Crops and Trees	Titleholders Share Croppers Lease Holders	• Advance notice to all to harvest crops, fruits and remove trees. • In case of standing crops, cash compensation at current market prices for mature crops based on average production.

Impact Type	Entitled Entity	Entitlement based on The Right to Fair Compensation and Transparancy in Land Acqisition and Resettlement and Rehabilitation Act 2013.
		• For fruit bearing trees compensation at average fruit production for next 15 years to be computed at current market value. • For timber trees compensation at market price based on kind of trees.
5. Loss of Livelihood		
5A. Loss of Primary Source of Income/ Livelihood	Titleholders Non-Titleholders Agricultural Labourers Share Croppers	• Subsistence Grant of Rs. 50,000/- • Rs. 25,000/- for cattle shed or petty shop • One time grant of Rs. 25,000/- to artisans, small traders and certain others • Employment opportunity for PAPS in the sub-project construction work, if available and if so desired by them. • National/State level job card under National Rural Employment Guarantee Program. • Income generation skill upgrading vocational training of their choice at a rate of Rs. 10,000/- • For Agricultural Labourers and Share Croppers an assistance of 500 days of wages at prevailing minimum wage rate • One time resettlement allowance of Rs. 50,000/-
6. Loss of Access		
6A. Loss of Access	Titleholders Non-Titleholders Agricultural Labourers Share Croppers	• Provision of suitable and acceptable access or compensating the losses thereby in the spirit of the principle.
7. Common Property Resources		
7A. Loss of Common Property Resources	Community	• Reconstruction as per latest norms and guidelines, Commissioning and handing over to concerned departments/ community of all affected community property resources with community consultation and participation.
8. Vulnerables		
8A. Vulnerable	Women headed	• A onetime assistance of Rs. 50,000/- over and above other entitlements.

Impact Type	Entitled Entity	Entitlement based on The Right to Fair Compensation and Transparancy in Land Acqisition and Resettlement and Rehabilitation Act 2013.
PAPs	households, Widows, STs, Chronically ill, Old persons, etc.	• Handholding for ensured access to other government subsidies, schemes and services
9. Other Unforeseen/ Unanticipated Impacts		
9A. Unforeseen/ Unanticipated Impacts		• Any unforeseen/ unanticipated impacts due to the sub-projects will be documented and mitigated based on the spirit of the principle agreed upon in this framework.

8.8 Grievance Redress

26. This section deals with the structures and processes of multi-level, three-tier, Grievance Redress Mechanism and also the legal options available to not only the Project Affected Persons (PAPs) but also the Project Affected Beneficiaries who would enjoy the benefits of the project in terms of access to funds for reconstruction of their fully damaged homestead structures. The multi-level includes Gram Panchayat, District and State levels.

8.8.1 R&R Committee (RRC) and Grievance Redress Committees

In order to address grievances related to land acquisition and resettlement and rehabilitation implementation, three bodies are to be established; R&R Committee at the state level and Grievance Redress Committees at the district and Gram Panchyat (GP) level.

27. It is proposed that the PAPs first register the grievances with the IA. After receipt of grievance, the IA should take them to the committee to take up the matter during the next immediate meeting and initiate measures for redress. No grievance can be kept pending for more than a month which means the committee has to meet every month. Implementation of the redress rests with the PMU. In case the aggrieved party is not satisfied with the proposed redress measures, it can take approach the state level committee. If the aggrieved party is not satisfied with the decision of state level committee, it can approach the court of law.

The GRC at Gram Panchayat level will be headed by the elected Pradhan of the Panchayat who will also be the Convener. The District Collector will be the Chairman and the official in-charge of the DPIU will be the Convener of the District Level GRC. The Principal Secretary, Planning will be the Chairman of State level GRC while the Project Director will be its Convener.

The number of Members of GRC at each level will be decided by the Project Director at the time of constituting the GRCs at three levels. The membership will follow the following principles and the number of non-Government representatives will be in proportion to Government representatives. The level of Government representatives at each level will also be determined by the Project Director.

1. Representatives of participating Departments as reflected in PIU
2. Representative of the Revenue Department
3. Representative of Disaster Management Authority
4. Representatives of NGOs/CSOs including women
5. Representatives of Project Affected Beneficiaries/Project Affected Persons

Scope of GRC

The GRCs will receive and redress all complaints and grievance that relate to the Project that are formally brought to the GRCs in writing only by the person and group of persons who have a grievance because of the project's adverse impact on him/her and them. The complaints/grievance could relate, among others, to: (1) access to project benefits such as financial assistance to house construction; (2) selection of site for cluster house relocation; (2) selection of sites of relocation of damaged Government buildings and social infrastructure such as schools, health centers that require relocation; (3) payment of compensation and resettlement

assistance in accordance with social impact mitigation and eligibility criteria as set out in section 5.5 of ESMF.

Processes of GRCs

1. The GRCs will meet on a fixed day/date of every month during the first year and this could be changed during the following years;
2. The GRCs will meet the following working day if the day/date fixed for the monthly meeting falls on a holiday
3. The GRCs will consider and redress all registered and acknowledged complaints/grievance received at least 15 days before the day/date of the meeting;
4. The GRCs will work out a time frame to redress grievance at each level if the complaint/grievance is not addressed in the first meeting;
5. The GRCs will acknowledge the receipt of complaints/grievances by registered letter within one week;
6. The GRCs will hold public meetings that would also include all those who have complained or who have a grievance expressed in writing in order to facilitate transparency and accountability;
7. The GRCs at the levels of Gram Panchayats and Districts will fix a timeframe for appealing to the next level to seek grievance redress;
8. The GRC's decisions at the State level are not final and the complainants have the right to seek judicial redress if they are not satisfied with the final decision at the State level.
9. The grievances will be received in written form, as when they arrive and registered in the Grievance Register by the IA.
10. The procedures to redress grievances will be transparent involving all the members of the committee and the aggrieved party.
11. The timeframe for redressing grievances is given in the table below. The decisions regarding Redressal will be communicated in writing to the aggrieved party within a week after arriving at the decision. The aggrieved party when not satisfied may appeal to R&R Committee within a month of the communicating the decision. If the aggrieved party is not satisfied with decision of the R&R Committee, then it may seek legal redress.

Documentation of the Processes

The GRCs at each level will maintain the following three Grievance Registers that would, among others, help with monitoring and evaluation of the functioning of GRCs but also to document the processes of GRCs.

- **Complaints/Grievances Register:** (1) Serial Number; (2) Case Number; (3) Name of Complainant; (4) Gender; (5) Name of Father/Husband; (6) Full Address of the Complainant; (7) Main complaint/grievance; (8) List of documents attached; (9) History of Previous complaint/grievance, if any (10) Date of receipt of complaint/grievance and (11) Date of acknowledgement of complaint/grievance

- **Resolution Register:** (1) Serial Number; (2) Case Number; (3) Name of Complainant; (4) Main complaint/grievance; (5) Date of field investigation, if any; (6) Date of hearing; (7) Decision of GRC at that level; (8) Progress – redressed, pending or rejected; and (9) Key agreements/commitments.
- **Closing Register:** (1) Serial Number; (2) Case Number; (3) Name of complainant/grieved person; (4) Date of hearing; (5) Decision/Response of the complainant/grieved person; (6) Date, Mode and Medium of communication to complainant/grieved person; (7) Date of closing of complaint/grievance; (8) Whether appealing to next level – yes or no; and (9) whether or not seeking legal redress.

The grievance redress process will be a continuous, transparent and participatory process that would be an integral part of the project's accountability and governance agenda. The GRC at each level will maintain the above mentioned Registers. The GRC at each level will also keep a separate case file for each complainant/grieved persons in which all complaint/grievance related documents will be kept. The PMU will also prepare periodic reports on the grievance redress on the basis of reports received from the three levels of GRCs.

Table 30: Grievance Redress Mechanism

Level	Agency	Time period for redress of grievances	Issues likely to emerge	Responsibility
Village	Gram Panchayat	Maximum of two weeks	▪ Encroachment ▪ Land acquisition ▪ Livelihood Assistance ▪ Compensation ▪ Inclusion of households	GP, Project Staff; GP Pradhan as convener
District	Grievance Redress Committee	Maximum of one month		District Collector as Chairperson and DPIU in-charge as Convener
State	R&R Committee	Maximum of three months		Principal Secretary, Planning as Chairman, Project Director, PMU as Convener

8.8.2 Legal Options to PAPs

28. The PAPs will have two kinds of options for addressing their grievance s relating to the Land Appropriation. One is the grievance redressed mechanism incorporate in this framework as above. The other is the general legal environment consisting of court of law to address their grievance. These options will be disclosed to the PAPs during the public consultation process.

8.9 Consultation

29. UDRP-AF will ensure the participation of the PAPs and other stakeholders through periodic consultations for planning and monitoring project activities. Consultations will be held at regular intervals with Project Affected Persons, GP members, Women, etc. The following consultations will be carried out during the project cycle.

- Estimation of land requirement; Title holder, extent, location, etc.
- Identification and verification of Encroachers/ Squatters
- Socio-economic survey for preparing the baseline of the displaced/affected families
- Motivation of titleholders and encroachers to facilitate the Land Acquisition process and voluntary land donations
- Implementation of the IEC/ Communication plan for awareness creation about project activities
- Identifying livelihood support programs for PAPs

30. In order to keep the momentum of consultation, activity specific consultations and a quarterly consultation will be held with all stakeholder groups.

8.9.1 Stakeholder Participation

31. UDRP-AF recognizes the fact that PAPs are important stakeholders of the project. Hence, the GPs would ensure that these stakeholders are consulted on issues and they participate in all the sub-project activities including planning and implementation of RAP (if any). The GPs would address the PAPs legitimate concerns and provide opportunities and avenues for consultation and their participation. In order to provide a sense of ownership and ensure sustainability, the PAPs would be a part of the decision making process, where appropriate. The project has a commitment for community participation in each of the sub-projects taken up. Participation of affected community is ensured through a number of mechanisms such as:

- The PAPs as members of the GPs will be involved in the identification of R&R issues and affected people.
- The preparation and implementation of the RAPs will be done with the active involvement of PAPs.
- PAPs with grievances have opportunities to approach GRC and RRC if required for their redress
- The list of PAPs will be displayed at the Village level.

8.10 Special Attention to Women and Other Vulnerable Groups

35. The vulnerable groups include Scheduled Tribes and Castes, Women Headed Households, Destitutes, Below Poverty Line families, Old Aged, Chronically Ill and Orphans. It is envisaged that in the course of conducting Social Assessment and preparing and implementing Resettlement Action Plans, interests of these vulnerable groups would be adequately addressed and protected.

8.10.1 Information on Vulnerable Groups

36. Like in other projects, as per available experience, in these sub-projects as well, women are likely to experience differential socio-economic setbacks due to their disadvantaged positioning within socio-economic structures and processes. This is likely to be manifested most in the loss of common property resources as a result of their displacement. In order to mitigate such impacts the IA during verification and socio-economic survey shall collect information on the following:

- Number of women headed households and Tribal households and other vulnerable persons
- Socio-demographic characteristics of affected women and tribals and other vulnerable persons
- Health status including number of children per woman
- Women's role in household economy by collecting information on usual activity; occupation; etc.
- Time Disposition
- Decision making power among women PAPs

37. As women are often the worst victims of transition between displacement and resettlement, they have to be integrated in the project as full-fledged participants taking part in all the stages of the project starting from planning through implementation and on to the post-project stages. This is the only way to make sure that the process of resettlement and rehabilitation an exercise in equitable distribution of resources and benefits in a gender sensitive manner.

8.10.2 Actions to be taken

38. IA has to perform following tasks:

- Ensure participation of vulnerable in project activities
- Ensuring facilities in construction camps
- Carrying out other responsibilities towards vulnerable groups

Participation

39. Participation and engagement of women and other vulnerable can be ensured specifically in the following ways:

- Allow women to take part in the consultation process.
- Ensure that the women are consulted and invited to participate in group-based activities, to gain access and control over the resources. Compensation for land and assets lost, being same for all the affected or displaced families, special care needs to be taken by the IAs for women groups, while implementing the process of acquisition and compensation as well.
- Ensure that women are actually taking part in issuance of identify cards, opening accounts in the bank, receiving compensation amounts through cheques in their name, etc. This will further widen the perspective of participation by the women in the project implementation. While registering properties make sure they are registered in both the spouses names.
- Provide separate trainings to women groups for upgrading the skill in the alternative livelihoods and assist throughout till the beneficiaries start up with production and business.
- Initiate women's participation through Self-Help Group formation in each of the villages affected by the project. These groups can then be linked to special development schemes of the Government.
- Encourage women to evaluate the project outputs from their point of view and their useful suggestions should be noted for taking necessary actions for further modifications in the project creating better and congenial situation for increasing participation from women.
- Devise ways to make other vulnerable to participate in the project activities.
- Implement Vishakha Guidelines in all work places.

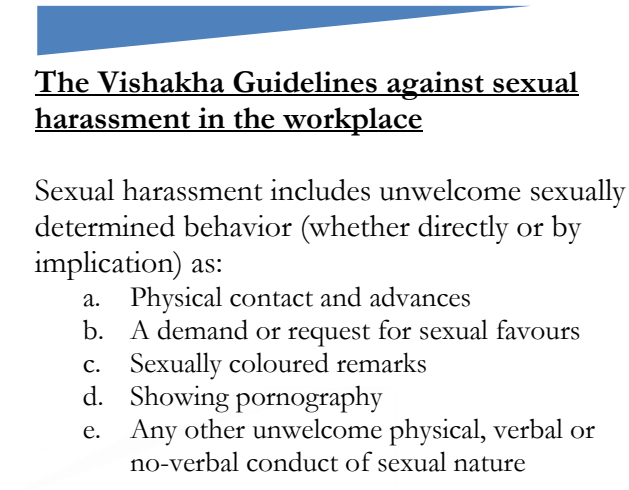


Figure 2: Vishakha Guidelines

40. All these done in a participatory manner might bring sustainable results in terms of income restoration of women as a vulnerable group.

Involvement during Construction

41. Wherever possible, women's involvement in construction activities should be encouraged in order to help them have access to benefits of project activities. The construction works starts after the R&R activities are over and sites are clear of any encroachment and other encumbrances. The construction contractors set up their construction camps on identified locations, where labour force required for the construction activities will be provided with temporary residential accommodation and other necessary infrastructure facilities. The labour force required for the construction activities has to be of a highly skilled nature, as there is a lot of mechanized work in construction of sub-projects. In addition, there is also a requirement of unskilled labour, where women can certainly contribute.

42. Apart from this, women as family members of the skilled and semi-skilled labourers, will also stay in the construction camps and will be indirectly involved during the construction phase. The families of labourer will include their children also. The construction contractors are expected to bring along skilled labour where as local labour available will be used for unskilled activities. The labour force, both migratory as well as local will have male as well as female members.

Ensuring Facilities in Construction Camps

43. Foreseeing the involvement of women, both direct and indirect in the construction activities, IA shall ensure certain measures that are required to be taken by the construction contractor towards welfare and wellbeing of women and children during the construction phase such as:

(a) **Temporary Housing:** During the construction the families of labourers/workers should be provided with residential accommodation suitable to nuclear families.
(b) **Health Centre:** Health problems of the workers should be taken care of by providing basic health care facilities through health centres temporarily set up for the construction camp. The health centre should have at least a doctor, nurses, General Duty staff, medicines and minimum medical facilities to tackle first-aid requirements or minor accidental cases, linkage with nearest higher order hospital to refer patients of major illnesses or critical cases. The health centre should have MCW (Mother and Child Welfare) units for treating mothers and children in the camp. Apart from this, the health centre should provide with regular vaccinations required for children.
(c) **Day Crèche Facilities:** It is expected that among the women workers there will be mothers with infants and small children. Provision of a day crèche may solve the problems of such women, who can leave behind their children in such a crèche and work for the day in the construction activities. If the construction work involves women in its day-night schedules, the provision of such a crèche should be made available on a 24-hour basis.
The crèche should be provided with at least a trained ICDS (Integrated Child Development Scheme) worker with '*Ayahs*' to look after the children. The ICDS worker, preferably women, may take care of the children in a better way and can

manage to provide nutritional food (as prescribed in ICDS and provided free of cost by the government) to them. In cases of emergency, a trained ICDS worker can tackle the health problems of the children much more efficiently and effectively and can organise treatment linking the nearest health centre.

(d) **Proper Scheduling Of Construction Works:** Owing to the demand of a fast construction work, it is expected that a 24 hours-long work-schedule would be in operation. Women, especially the mothers with infants, should to be exempted from night shifts as far as possible. If unavoidable, crèche facilities in the construction camps must be extended to them in the night shifts too.

(e) **Education Facilities:** The construction workers are mainly mobile groups of people. They are found to move from one place to another taking along their families with them. Thus, there is a need for educating their children at the place of their work. Wherever feasible, day crèche facilities may be extended with primary educational facilities or some kind of informal education facilities could be created at the construction camp.

(f) **Control on Child Labour**: Minors, i.e. persons below the age of 14 years, should be restricted from getting involved in the constructional activities. It will be the responsibility of IA and social and environmental experts of DPIUs to ensure that no child labourer is engaged in the activities. Exploitation of women is very common in such camps. IA shall keep strong vigilance to ensure cessation of such exploitation.

(g) **Special Measures for Controlling STD, AIDS:** Solitary adult males usually dominate the labour force of construction camps. They play a significant role in spreading sexually transmitted diseases. In the construction camps as well as in the neighbouring areas, they are found to indulge in high-risk behaviour giving rise to STDs and AIDS.

While it is difficult to stop such activities, it is wiser to make provisions for means of controlling the spread of such diseases. IA shall conduct awareness camps for the target people, both in the construction camp and neighbouring villages as well. IA shall have to tie up SACS for awareness and IEC materials, and supply of condoms at concessional rate (or free) to the male workers may help to a large extent in this respect.

Other Actions

- Cases of compensation to vulnerable should be handled with care and concern considering their inhibited nature of interaction.
- All compensations and assistances would be paid in a joint account in the name of both the spouses; except in the case of women headed households and women wage earners.
- IA shall prepare a list of able bodied and willing women PAPs for constructional activities and hand over the same to IAs to be forwarded to contractor.
- At least half (subject to a minimum of one third) of the IA staff and all other involved agencies (including consulting agencies) staff should be woman. When qualified/ skilled women are not available, women with lesser qualifications/ skills may be employed and trained. They may be encouraged and facilitated to obtain the necessary qualifications and/or skills during the employment. The proposed women personnel shall be available to work at site for at least 50% of the duration of the contract. Women may be replaced during the period of contract, only with women persons of equivalent qualifications and experience.

- Same wage rate for men and women must be ensured.
- Scheduled tribe population identified and they should be given first preference in selection for any project benefit, viz., agriculture demonstration plots, shared tube wells, rehabilitation of silted lands, livelihoods, etc.
- The petty contracts arising out of the sub-project should considered entrusting to SHGs on community contract basis.
- While selecting community members for training at least half of them should be women and vulnerable persons.

8.11 Means of Disclosure

44. This RPF is translated into Hindi and will be kept at the District Library, District Collector's Office and Block Development Office for interested persons to read and copy. This RPF will be made available at the project web site as well. A summary of each RAP prepared under the project, will be displayed at the Gram Panchayat Offices of the concerned villages. This summary will include the details such as names of titleholders and/or encroachers, voluntary donations made, detail of acquisition, land rate, rehabilitation assistance, etc. This summary will be displayed at the Block Development Offices and at the District Collectors offices too. Apart from this, all the RAPs will be placed on the project web site.

8.12 Budget

45. The budget for implementing the RAP/ ARAP needs to be worked out for each sub-project on actual basis and included in the DPR. This should include cost of Land Acquisition, implementing the RAP/ ARAP provisions, supervision, monitoring and evaluation, audit and impact assessment costs.

9. Annexures

Annexure 1: Environmental and Social Screening Data Sheet

A. Environmental Screening

Part a: General Information

1. Location of the sub-project	
• Name of Sub-Project	
• Name of the State	**Uttarakhand**
• District	
• Block	
• Village	
2. Implementing Agency Details (sub-project level)	
• Name of the Department/Agency	
• Name of the designated contact person	
• Designation	
• Contact Number	
• E-mail Id	

Part b: Environment Screening

Question	Yes	No	Details
1. Is the sub-project located in whole or part within a radius of 1 km from any of the following environmentally sensitive areas?			
a. Biosphere Reserve			If yes, mention name and distance.
b. National Park			If yes, mention name and distance.
c. Wildlife/Bird Sanctuary			If yes, mention name and distance.
d. Game Reserve			If yes, mention name and distance.
e. Tiger Reserve/Elephant Reserve			If yes, mention name and distance.
f. Wetland			If yes, mention name and distance.
g. Natural Lake			If yes, mention name and distance.
h. Swamps/Mudflats			If yes, mention name and distance.
i. World Heritage Sites			If yes, mention name and distance.
j. Archaeological monuments/sites (under ASI's central/state list)			If yes, mention name and distance.
k. Reservoirs/Dams			If yes, mention name and distance.
2. Is the sub-project located in whole or part within a radius of 500 m from the following features?			
a. Reserved/Protected Forest			If yes, mention name and distance
b. Migratory Route of Wild Animals/Birds			If yes, mention name and distance
c. Area with threatened/rare/ endangered fauna (outside protected areas)			If yes, mention name and distance

d. Area with threatened/rare/ endangered flora (outside protected areas)			If yes, mention name and distance
e. Habitat of migratory birds (outside protected areas)			If yes, mention name and distance
f. Historic Places (not listed under ASI – central or state list)			If yes, mention name and distance
g. Regionally Important Religious Places			If yes, mention name and distance
h. Public Water Supply Areas from Rivers/Surface Water Bodies/ Ground Water Sources			If yes, mention name and distance
3. Information related to sub-project impacts: **Will the construction, operation or decommissioning of this sub-project cause changes to or have impacts on the following?**			
1. Land Use			If yes, give full details.
2. Water			If yes, give full details.
3. Air			If yes, give full details.
Will the construction, operation or decommissioning of this sub-project produce, cause or release any of the following?			
4. Solid waste			If yes, give full details.
5. Noise/ vibration/ light/ heat energy/ electromagnetic radiation			If yes, give full details.
6. Accidents			If yes, give full details.
Other			
7. Are there any areas around the project location which are used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration, which could be affected by the sub-project?			If yes, give full details.
8. Any other impacts?			If yes, give full details.

Part c: Transect Walk Map

While filling in this data sheet, the implementing agency should hold a consultation with the local community through the Gram Panchayat in order to determine the most suitable alignment, sort out issues of land availability (including forest land), moderate any adverse social and environmental impacts and elicit necessary community participation in the programme. For this purpose the implementing agency should organise an informal 'Transect Walk' and prepare a map (Not To Scale) of this and attach the same to this data sheet. The following points should be borne in mind while preparing this map.

- The Transect walk shall be undertaken by the Officer filling in this data sheet, accompanied by the Sarpanch of the Panchayat/ Ward Member and other community members after adequate advance publicity. The local Forest official may also be associated if forest land is involved.
- During the Transect Walk, issues relating to land requirements for the road/ bridges and its impact on landowners, encroachers, squatters, etc. need to be discussed with members of the local community present. Collect all land related revenue records, maps and gazettes for supporting the claims and attach to this report. To this check list attach a typical cross section of the structure at its widest and note the land required.

- Environmental impact on vegetation, land, soil and water etc. shall be identified and noted for resolution.
- During the walk, due opportunity shall be given to interested persons to put forward their points of view.
- At the end of the walk and after recording the issues that arose during the walk, the action taken/ proposed to resolve the issues be noted. This shall be recorded by the Secretary of the Panchayat and countersigned by the Sarpanch/ Ward Member. A copy of this document shall be attached to the data sheet.
- During or after (as convenient) the Transect Walk, a map (Not To Scale) with the road/ bridges alignment, the environmental features along the road/ bridges, ownership of land need to be prepared. Identify all structures, viz., places of workship, schools, hospitals and other common property resources, forest land, etc. and locate on this Transect Walk Map.
- To this map attach some (a minimum of four on right side and four on left side and one each at the beginning and ending) photographs showing and highlighting the most critical places.

Part d : Result/Outcome of Environmental Screening Exercise		
1.	No EIA Required	
2.	EIA Required	
3.	Regulatory Clearance Required	If yes, mention type of clearance required.

B. Social Screening

Part a: Social Impacts Information

1. Land Requirement for the sub-project:

Details	**Unit**	**Quantity**	**Classification/ Category**	**Present Usage and Users**
Government Land	Acres			
Private Land	Acres			
Title Holders	Number			
Non-Titleholders – Encroachers	Number			
Non-Titleholders – Squatters	Number			
Various users of Govt. Land under various tenures	Number			
People losing livelihoods/ access due to loss of Govt. Lands project	Number			

2. Agricultural Land affected due to sub-project:

Details	**Unit**	**Quantity**

Total Affected	Number	
Title Holders	Number	
Non-Titleholders – Encroachers	Number	
Non-Titleholders – Squatters	Number	
BPL Families losing Agricultural Land	Number	

3. Dwellings affected due to sub-project:

Details	Unit	Quantity
Total Affected	Number	
Title Holders	Number	
Non-Titleholders – Encroachers	Number	
Non-Titleholders – Squatters	Number	
BPL Families losing Dwellings	Number	

4. Commercial properties affected due to sub-project:

Details	Unit	Quantity
Total Affected	Number	
Title Holders	Number	
Non-Titleholders – Encroachers	Number	
Non-Titleholders – Squatters	Number	
BPL Families losing Commercial Properties	Number	

5. Common Property Resources Affected: (Please give each type by number)

Type	Unit	Quantity
	Number	
	Number	
	Number	
	Number	
	Number	

S No	Items	Results
1.	Total no of HH affected due to proposed project activity (Single or multiple impacts)	
2.	Total no of vulnerable HH affected due to proposed project activity (Single or multiple impacts)	
3.	Total number of Community Property Resources affected	

Part c : Result/ Outcome of Social Screening Exercise		
1.	No SA Required	
2.	SA Required	

Annexure 2: Format for Voluntary Land Donation

Voluntary Donation of Land
On a Rs. 10/- Stamp Paper

1. This deed of voluntary donation is made and executed on …..... day of …..…… between Sri/Smt ….....S/o W/o…….. Age…… Occupation ……. Resident of …..... herein after called the "Title holder / Encroacher" on one part. This expression shall mean and include his legal representatives, successors – in-interest, heirs, assignees, nominees etc.

AND

Sri. ……..…… S/o W/o …….. Aged…… Designation……. Herein after called the "Recipient" which term denotes to "for and on behalf of Project Management Unit, Uttarakhand Disaster Recovery Project, Government of Uttarakhand" on the other part and shall mean and include his successors –in-office, nominees and assignees etc.

2. Whereas, the details of the Location of the, land are given below:

Location Details	
Village	
Gram Panchayat	
Block	
District	
Title Holder/ Encroacher Details	
Name of Title Holder/Encroacher	
Father/ Husband's Name of Title Holder/Encroacher	
Status:	Title Holder/ Encroacher
Age: occupation: Residence:	
Gender:	
Schedule –Land Details/Structure	
Land in Question	
Area	
Location	
North Boundary	
East Boundary	
West Boundary	
South Boundary	

Note: Detailed Map to the scale is appended.

3. Where as the Title Holder is presently using/ holds the transferable right of the above mentioned piece of land in the village mentioned above. Whereas the Encroacher does not

hold any transferable rights of the above mentioned piece of land in the village mentioned above but has been a long standing encroacher, dependent on its usufruct hereditarily.

4. Whereas the Title Holder/Encroacher testifies that the land is free of encumbrances and not subject to other claims/ claimants.

5. Whereas the Title Holder/Encroacher hereby voluntarily surrenders the land/structure without any type of pressure, influence or coercion what so ever directly or indirectly and hereby surrender all his/her subsisting rights in the said land with free will and intention.

6. Whereas the Recipient shall construct and develop infrastructure facilities under the project, Uttarakhand Disaster Recovery Project, and take all possible precautions to avoid damage to adjacent land/structure/other assets.

7. Whereas both the parties agree that the infrastructure so constructed/developed shall be for the public purpose.

8. Whereas the provisions of this agreement will come into force from the date of signing of this agreement.

Signature of Title Holder/Encroacher		Signature of BDO	
Name of Title Holder/Encroacher		Name of BDO	
Date		Date	
Identified by			
1. Name:	Signature:		
2. Name:	Signature:		
Witnesses			
Signature of Gram Panchayat President			
Gram Panchayat President Name			
Signature of GP Secretary			
Name of GP Secretary			
Signature of DPIU Representative			
Name of DPIU Representative			
Designation of DPIU Representative			

Annexure 3: Format for Preparation of Resettlement Action Plan

1. Introduction

1. Brief Introduction of the sub-project
2. Description of Component(s) that cause land acquisition/alienation and resettlement
3. Overall Estimates of Land Acquisition and R&R

2. Measures to Minimize Resettlement

1. Description of Efforts Made for Minimizing Displacement
2. Description of the Results of these Efforts
3. Description of Mechanisms to Minimize Displacement and Loss of Livelihood/Income during Implementation

3. Census and Socio-Economic Surveys

1. Provide the results of the census and socio-economic surveys
2. Identify all categories of impacts and the extent of impact on each affected

4. Consultation and involvement of PAPs

1. Describe various Stakeholders
2. Summarize process of consultation on the results of socio-economic surveys
3. Describe the need and mechanisms to conduct updates to socio-economic surveys
4. Describe how this process of consultation would be continued through implementation and monitoring
5. Describe the plan for disseminating information to Project Affected Persons

5. Entitlement Framework

1. Provide a definition of PAFs and PAPs together with their categorization based on impacts
2. Describe R&R entitlements for each category of impact
3. Describe method of valuation used for affected land, structures and other assets
4. Using Entitlement Matrix, present a table of all PAFs/PAPs and their losses/ impacts and entitlements

6. Relocation (if applicable)

1. Does the Project need community relocation sites? If yes, have they been inspected and accepted by PAPs?
2. Have the Project Affected Persons agreed to the strategy for housing replacement? Will new housing be constructed/allocated? If PAPs are to construct houses, explain if compensation entitlement for housing is sufficient to help them construct houses.
3. List of proposed sites along with number of affected families to be relocated
4. Describe respective mechanisms for (i) procuring/acquiring/alienating ; (ii) developing and (iii) allotting resettlement sites

5. Provide detailed description of arrangements for development of resettlement sites including provision of social infrastructure
6. Describe the feasibility studies conducted to determine the suitability of the development of sites.

7. Income Restoration

1. Are the compensation entitlements sufficient to restore income streams for each category of impact? If not, what additional economic rehabilitation measures are necessary?
2. Briefly spell out the restoration strategies for each category of impacts, and describe institutional, financial and technical arrangements/aspects involved
3. Describe the process of consultation with PAPs to finalize strategies for income restoration
4. How do strategies for restoration vary with the area/locality of impact
5. If income restoration involves change in livelihoods or other economic activities allow substantial amount of time for capacity building, accessing institutional funds/credits/markets, preparation and implementation. Work out the rate of returns for each of the economic activities opted by the entitled person.
6. How are the risks of impoverishment proposed to be addressed?
7. Explain the main institutional and other risks for effective implementation of plans for restoration of livelihood
8. Describe the process for monitoring the effectiveness of income restoration activities

8. Institutional Arrangements

1. Describe institution(s) responsible for: (a) delivery of each item/activity in the entitlement policy; (b) implementation of resettlement and rehabilitation programs and (c) coordination of all other activities as described in the Rehabilitation Action Plan
2. State how coordination issues will be addressed in cases where resettlement and rehabilitation are spread over a number of institutional/departmental jurisdictions
3. Indicate the agency that will coordinate all implementing agencies – do they have the necessary mandate and the resources
4. Describe the external (non-Project) institutions/departments involved in the process of resettlement and restoration of income such as land development, land allocation, credit, training for capacity building and the mechanisms in place to ensure adequate cooperation and performance of these institutions/departments
5. Describe the results of the institutional capacity assessment and give the institutional development plans including staffing schedule and training requirements
6. Discuss institutional capacity for, and commitment to, resettlement and rehabilitation

9. Monitoring and Evaluation

1. Describe the internal monitoring process
2. Define key monitoring indicators for resettlement, rehabilitation and participation and provide a list of these indicators which would be used for internal monitoring
3. Describe institutional (including financial) arrangement
4. Describe frequency of reporting and contents of reports
5. Describe the process for integrating feedback from internal monitoring into implementation

6. Describe financial arrangements for external monitoring including process for awarding and maintenance of contracts for the entire duration of R&R
7. Describe the methodology for external monitoring
8. Describe frequency of external reporting and its contents

10. Redress of Grievances

1. Describe the structure and process of grievances mechanisms at various levels including step-by-step process for registering and addressing grievances and provide specific details regarding registering complaints, discussing them with PAPs, response time, communication modes etc.
2. Describe the mechanism for appeal
3. Describe the provision, if any, to enable PAPs to approach civil courts in case these provisions fail.

11. Implementation Schedule

1. List the chronological steps in implementation of R&R Action Plan including identification of agencies responsible for each activity along with a brief explanation of each activity
2. A month-wise implementation schedule (Gantt chart) of activities to be taken as part of R&R Action Plan
3. Description of the linkage between R&R implementation and initiation of civil works for each of the Project component

12. Costs and Budgets

1. Clear statement of financial responsibility and authority
2. List the sources of funds for R&R and describe the flow of funds
3. Indicate if costs of R&R are included in the overall Project costs
4. Identify R&R costs, if any, to be funded by the WB
5. Provide a cost-wise, item-wise budget estimate for the entire R&R costs including administrative expenses, monitoring and evaluation and contingencies
6. Describe the specific mechanisms to adjust cost estimates by *inflation* factor
7. Describe provisions to account for different types of contingencies

Annexure 4: Format for Preparation of Abbreviated Resettlement Action Plan

1. Introduction

1. Brief Introduction of the sub-project
2. Description of Component(s) that cause land acquisition/alienation and resettlement
3. Overall Estimates of Land Acquisition and R&R

2. Census and Socio-Economic Surveys

1. Provide the results of the census and socio-economic surveys
2. Identify all categories of impacts and the extent of impact on each affected

3. Consultation and involvement of PAPs

1. Describe various Stakeholders
2. Summarize process of consultation on the results of socio-economic surveys
3. Describe the plan for disseminating information to Project Affected Persons

4. Entitlement Framework

1. Describe R&R entitlements for each category of impact
2. Describe method of valuation used for affected land, structures and other assets
3. Using Entitlement Matrix, present a table of all PAFs/PAPs and their losses/ impacts and entitlements

5. Income Restoration

1. Are the compensation entitlements sufficient to restore income streams for each category of impact. If not, what additional economic rehabilitation measures are necessary.
2. Briefly spell out the restoration strategies for each category of impacts, and describe institutional, financial and technical arrangements/aspects involved
3. Describe the process of consultation with PAPs to finalize strategies for income restoration
4. If income restoration involves change in livelihoods or other economic activities allow substantial amount of time for capacity building, accessing institutional funds/credits/markets, preparation and implementation. Work out the rate of returns for each of the economic activities opted by the entitled person.
5. How are the risks of impoverishment proposed to be addressed?

6. Institutional Arrangements

1. Describe institution(s) responsible for: (a) delivery of each item/activity in the entitlement policy; (b) implementation of resettlement and rehabilitation programs and (c) coordination of all other activities as described in the Rehabilitation Action Plan

7. Monitoring and Evaluation

1. Describe the internal monitoring process

8. Redress of Grievances

1. Describe the structure and process of grievances mechanisms at various levels including step-by-step process for registering and addressing grievances and provide specific details regarding registering complaints, discussing them with PAPs, response time, communication modes etc.

2. Describe the mechanism for appeal
3. Describe the provision, if any, to enable PAPs to approach civil courts in case these provisions fail.

9. Implementation Schedule

1. List the chronological steps in implementation of R&R Action Plan including identification of agencies responsible for each activity along with a brief explanation of each activity.

10. Costs and Budgets

1. Clear statement of financial responsibility and authority
2. List the sources of funds for R&R and describe the flow of funds
3. Indicate if costs of R&R are included in the overall Project costs
4. Identify R&R costs, if any, to be funded by the WB
5. Describe the specific mechanisms to adjust cost estimates by *inflation* factor
6. Describe provisions to account for different types of contingencies

Annexure 5: Content of an Environmental Assessment Report for a Category E1 Project

1. An environmental assessment (EA) report for a Category A project[1] focuses on the significant environmental issues of a project. The report's scope and level of detail should be commensurate with the project's potential impacts. The report submitted to the Bank is prepared in English, French, or Spanish, and the executive summary in English.

2. The EA report should include the following items (not necessarily in the order shown):

(a) *Executive summary*. Concisely discusses significant findings and recommended actions.

(b) *Policy, legal, and administrative framework*. Discusses the policy, legal, and administrative framework within which the EA is carried out. Explains the environmental requirements of any cofinanciers. Identifies relevant international environmental agreements to which the country is a party.

(c) *Project description*. Concisely describes the proposed project and its geographic, ecological, social, and temporal context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, power plants, water supply, housing, and raw material and product storage facilities). Indicates the need for any resettlement plan or indigenous peoples development plan[2] (see also subpara. (h)(v) below). Normally includes a map showing the project site and the project's area of influence.

(d) *Baseline data*. Assesses the dimensions of the study area and describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences. Also takes into account current and proposed development activities within the project area but not directly connected to the project. Data should be relevant to decisions about project location, design, operation, or mitigatory measures. The section indicates the accuracy, reliability, and sources of the data.

(e) *Environmental impacts*. Predicts and assesses the project's likely positive and negative impacts, in quantitative terms to the extent possible. Identifies mitigation measures and any residual negative impacts that cannot be mitigated. Explores opportunities for environmental enhancement. Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions, and specifies topics that do not require further attention.

(f) *Analysis of alternatives*.[3] Systematically compares feasible alternatives to the proposed project site, technology, design, and operation—including the "without project" situation—in terms of their potential 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. For each of the alternatives, quantifies the environmental impacts to the extent possible, and attaches economic values where feasible. States the basis for selecting the particular project design proposed and justifies recommended emission levels and approaches to pollution prevention and abatement.

(g) *Environmental management plan (EMP)*. Covers mitigation measures, monitoring, and institutional strengthening; see outline in **OP 4.01, Annex C**.

(h) *Appendixes*

(i) List of EA report preparers—individuals and organizations.

(ii) References—written materials both published and unpublished, used in study preparation.
(iii) Record of interagency and consultation meetings, including consultations for obtaining the informed views of the affected people and local nongovernmental organizations (NGOs). The record specifies any means other than consultations (e.g., surveys) that were used to obtain the views of affected groups and local NGOs.
(iv) Tables presenting the relevant data referred to or summarized in the main text.
(v) List of associated reports (e.g., resettlement plan or indigenous peoples development plan).

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1. The EA report for a Category A project is normally an environmental impact assessment, with elements of other instruments included as appropriate. Any report for a Category A operation uses the components described in this annex, but Category A sectoral and regional EA require a different perspective and emphasis among the components. The Environment Sector Board can provide detailed guidance on the focus and components of the various EA instruments.

2. See OP/BP 4.12, *Involuntary Resettlement* , and **OP 4.10**, *Indigenous Peoples*.

3. Environmental implications of broad development options for a sector (e.g., alternative ways of meeting projected electric power demand) are best analyzed in least-cost planning or sectoral EA. Environmental implications of broad development options for a region (e.g., alternative strategies for improving standards of living an a rural area) are best addressed through a regional development plan or a regional EA. EIA is normally best suited to the analysis of alternatives within a given project concept (e.g., a geothermal power plant, or a project aimed at meeting local energy demand), including detailed site, technology, design, and operational alternatives.

Annexure 6: Environmental Management Plan

1. A project's environmental management plan (EMP) consists of the set of mitigation, monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. The plan also includes the actions needed to implement these measures.[1] To prepare a management plan, the borrower and its EA design team (a) identify the set of responses to potentially adverse impacts; (b) determine requirements for ensuring that those responses are made effectively and in a timely manner; and (c) describe the means for meeting those requirements.[2] More specifically, the EMP includes the following components.

Mitigation

2. The EMP identifies feasible and cost-effective measures that may reduce potentially significant adverse environmental impacts to acceptable levels. The plan includes compensatory measures if mitigation measures are not feasible, cost-effective, or sufficient. Specifically, the EMP

(a) identifies and summarizes all anticipated significant adverse environmental impacts (including those involving indigenous people or involuntary resettlement);

(b) describes—with technical details—each mitigation measure, including the type of impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate;

(c) estimates any potential environmental impacts of these measures; and

(d) provides linkage with any other mitigation plans (e.g., for involuntary resettlement, indigenous peoples, or cultural property) required for the project.

Monitoring

3. Environmental monitoring during project implementation provides information about key environmental aspects of the project, particularly the environmental impacts of the project and the effectiveness of mitigation measures. Such information enables the borrower and the Bank to evaluate the success of mitigation as part of project supervision, and allows corrective action to be taken when needed. Therefore, the EMP identifies monitoring objectives and specifies the type of monitoring, with linkages to the impacts assessed in the EA report and the mitigation measures described in the EMP. Specifically, the monitoring section of the EMP provides

(a) a specific description, and technical details, of monitoring measures, including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and

(b) monitoring and reporting procedures to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.

Capacity Development and Training

4. To support timely and effective implementation of environmental project components and mitigation measures, the EMP draws on the EA's assessment of the existence, role, and capability of environmental units on site or at the agency and ministry level.[3] If necessary, the EMP recommends the establishment or expansion of such units, and the training of staff, to allow implementation of EA recommendations. Specifically, the EMP provides a specific description of institutional arrangements—who is responsible for carrying out the mitigatory and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental management capability in the agencies responsible for implementation, most EMPs cover one or more of the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes.

Implementation Schedule and Cost Estimates

5. For all three aspects (mitigation, monitoring, and capacity development), the EMP provides (a) an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and (b) the capital and recurrent cost estimates and sources of funds for implementing the EMP. These figures are also integrated into the total project cost tables.

Integration of EMP with Project

6. The borrower's decision to proceed with a project, and the Bank's decision to support it, are predicated in part on the expectation that the EMP will be executed effectively. Consequently, the Bank expects the plan to be specific in its description of the individual mitigation and monitoring measures and its assignment of institutional responsibilities, and it must be integrated into the project's overall planning, design, budget, and implementation. Such integration is achieved by establishing the EMP within the project so that the plan will receive funding and supervision along with the other components.

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1. The management plan is sometimes known as an "action plan." The EMP may be presented as two or three separate plans covering mitigation, monitoring, and institutional aspects, depending on borrowing country requirements.
2. For projects involving rehabilitation, upgrading, expansion, or privatization of existing facilities, remediation of existing environmental problems may be more important than mitigation and monitoring of expected impacts. For such projects, the management plan focuses on cost-effective measures to remediate and manage these problems.
3. For projects having significant environmental implications, it is particularly important that there be in the implementing ministry or agency an in-house environmental unit with adequate

budget and professional staffing strong in expertise relevant to the project (for projects involving dams and reservoirs, see **BP 4.01, Annex B**).