# Environmental and Social Management Framework (ESMF)

Pakistan Hydro-Meteorological and Climate Services Project (PHCSP)

National Disaster Risk Management Fund

# Executive Summary

## Background

Climate change is expected to have an adverse impact on Pakistan, as it ranks 7th on the climate risk index. It continues to be one of the most flood-prone countries in the South Asia Region (SAR); suffering US$18 billion in losses between 2005 and 2014 (US$10.5 billion from the 2010 floods alone), equivalent to around 6% of the federal budget. Hydromet hazards have been coupled with rapid population growth and uncontrolled urbanization, leading to a disproportionate and growing impact on the poor.

Climate Change impacts have been exacerbated due to declining forest cover. During 1989-2009, Pakistan lost 25 percent of its natural forests (FAO 2009)1. Forest resources continue to deteriorate both qualitatively and quantitatively because of increasing pressure from a rising population and associated needs. Significant areas of forest lands have been transferred for non-forestry and commercial purposes, including agriculture, infrastructure, defense, and tourism (FAO 2009).

To increase economic productivity, and improve climate resilience, it is critical to improve the quality and accessibility of weather, water, and climate information services as well as to introduce nature-based solutions. Climate-resilient development requires stronger institutions and a higher level of observation, forecasting, and service delivery capacity, and restoration of natural or modified ecosystems can strengthen the climate resilience of the country; these could make a significant contribution to safety, security, and economic well-being. The Pakistan Hydro-Meteorological and Ecosystem Restoration Project expects to improve hydro-meteorological information and services, strengthen forecasting and early warning systems, and improve dissemination of meteorological and hydrological forecasts, warnings and advisory information to stakeholders and end-users, as well as restore ecosystems which contribute to build climate resilience in the country.

## Project Description

The project has two main components and will be implemented over a period of five years.

### *Component 1: Hydro-Meteorological and Climate Services*

The objective of this component is to improve the capability and thereby performance of the Pakistan Meteorological Department (PMD) to understand and make use of meteorological and hydrological information for decision making. This objective will be achieved through investment in strengthening institutional setup and building capacity of human resources at the PMD. Sub-component 1.1 will lead to institutional strengthening and improve the capability of the PMD to understand and make use of meteorological and hydrological information for decision-making. Sub-component 1.2 would lead to modernization of the observation infrastructure, data management and forecasting systems of PMD through investments in radars, automatic weather stations, weather observatories and modern ICT systems.

[1] FAO (Food and Agriculture Organization). 2009. "Pakistan Forestry Outlook Study." Working Paper No. APFSOS II/WP/2009/28, Office of the Inspector General of Forests, Ministry of Environment. Asia Pacific Forestry Sector Outlook Study II.

***Component 2: Nature Based Solutions and Climate Adaptation***

This component is to support the Ministry of Climate Change to design and roll-out Nature-based Solutions to enhance climate resilience and adaptation through reinforcing ecosystem services as well as to support climate actions carried out by community and startups. The National Disaster Risk Management Fund will be responsible for implementing the component on behalf of the Ministry of Climate Change (MoCC), as custodian of the ecosystem restoration and climate adaptation fund. Sub-component 2.1 will support the activities proposed under Eco-system Restoration Initiative (ESRI). Main focus of the activities to be supported under this component will be on Forest conservation, and biodiversity conservation and preventing land degradation. Relevant provincial departments (forest & wildlife) will be responsible for implementation on behalf of MoCC. Under Sub-component 2.2, the activities planned and implemented by NGOs or community-based organizations will be supported to enhance resilience of communities, and/or ecosystems on which they rely, to climate change risks and impacts. Sub-component 2.3 would introduce a seed funding for tech startups around climate resilience, working with partners such as the National Incubation Center which is the largest technology incubation center in Pakistan and supports the entire incubation process of entrepreneurs.

## Need for the Environmental and Social Management Framework (ESMF)

In line with the environmental legislation of Pakistan as well as World Bank (WB) Operational Policies, an Environmental and Social Management Framework (ESMF) for the project has been prepared. This ESMF assesses environmental and social impacts related to the physical interventions to expand facilities at PMD offices, install Automatic Weather Stations (AWS) and ecosystem restoration activities across Pakistan. The ESMF outlines an Environmental and Social Management and Monitoring Plan (ESMMP) as well as a Resettlement Policy Framework (RPF) to address any adverse potential impacts as a result of this Project. The ESMF includes institutional arrangements required to implement environmental and social aspects and presents monitoring requirements for effective implementation of mitigation measures; describes training needs and specific reporting and documentation requirements; and proposes a third-party validation mechanism.

## Assessment of Environmental and Social Baseline

***Physical Location and Land Use***

Component 1 will be implemented in across Pakistan. The project's physical intervention includes the establishment of a Monsoon Research Center (MRC) in Islamabad, installation of Weather Surveillance Radars (WSR) at Gwadar, Khuzdar, D. I. Khan, Quetta and Cherat, and establishment of a Regional Flood Forecasting Center in Peshawar. The exact locations of these facilities are unknown at the moment and will be finalized during project implementation.

Likewise, Component 2 i.e. Nature Based Solutions and Climate adaptation will be implemented throughout Pakistan. Potential locations and methodology for forest conservation, biodiversity and land protection areas have been pre-identified by the provincial governments. Actual intervention will be selected through prioritization and selection process carried out between NDRMF and provincial governments during project implementation. The remaining activity areas under PHCSP such as protection of marine environment and promotion of blue economy may also be possibly supported under this sub-component as the technical details and feasibility of these areas are substantiated.

The site specific safeguard instruments for the sub-projects under both components would be prepared as the result of environmental and social screening procedures included in this ESMF when locations have been identified.

***Surface and Ground Water Hydrology***

Pakistan can be divided into three main units in terms of hydrology, Indus Basin, closed basin of Kharan desert and the Makran coastal basin. Groundwater availability is limited in Pakistan and poses a severe problem for water supply. Worst affected are the most arid regions of Baluchistan and the southeast of Pakistan.

***Natural Hazard Vulnerability***

National Seismic Monitoring Centre of Pakistan issued the seismic zone map for Pakistan. Parts of KPK Province, Federally Administered Areas, Baluchistan and Sindh fall in Zones 3 and 4 which indicate moderate to severe damage to infrastructure and topography from earthquakes.[2]

The entire country is prone to floods, particularly along the Indus River Basin, with major flooding experienced in 2010 and 2015. Sub-projects may be installed in areas that are prone to flooding.

***Ecological Environment***

Pakistan has a rich natural heritage of biodiversity due to diverse physiography, soil types, and climate. Terrestrial biomes of Pakistan range from deserts in the south to the mountain ranges of the Himalayas, Karakorum, and Hindu Kush in the north and west. Pakistan can be divided in to eleven ecological zones and nine main agro-ecological zones according to distribution of flora and fauna. More than 6,000 flowering species have been recorded in Flora of Pakistan, of which 465 are thought to be endemic and 50 species are on the verge of extinction.[3]

There are 174 species of mammals, 668 species of birds, 177 species of reptiles, 22 amphibians, 198 freshwater fish species, 788 marine fist species found in Pakistan. 4 There are six endemic mammal species in Pakistan. Among them two — the little known woolly flying squirrel (Eupetaurus cinereus), found in the northern mountain areas, and the Indus dolphin — are endangered. In birds, two species of pheasants, the western tragopan (Tragopan melanocephalus), and the cheer pheasant (Catreus wallichii), together with the great Indian bustard (Ardeostis nigriceps) are listed as endangered. Of the 177 species of reptiles recorded in Pakistan, 18 are endemic. The IUCN Red List of threatened species lists 45 species of internationally threatened animals occurring in Pakistan. Of these, 4 are critically endangered, twelve are endangered and twenty-nine vulnerable. Out of these 45 species, 18 are mammals, 17 birds 9 reptiles, and one fish.[5]

Pakistan has a total of 334 Protected Areas which include 28 National Parks, 102 Game Reserves and 99 Wildlife Sanctuaries, with the remaining falling into other categories such as Wildlife Parks and Wildlife Refuges and unclassified.

***Forests***

The Land Use Atlas of Pakistan puts the official estimates of forest cover in Pakistan at 5.1%6 making it 4.47 million ha of total forest area in the country (5.1 percent of the total land area). 7Distribution of forests varies by province and other administrative area. In

[2] National Seismic Monitoring Center, Pakistan Meteorological Department (PMD)

[3] Flora of Pakistan; Missouri Botanical Garden and Karachi University

[4] Biodiversity in Pakistan: Key issues, 2011

[5] www.iucnredlist.org

[6] Government of Pakistan, 2009. Land use Atlas of Pakistan.

[7] Bukhari, S. B., T. Laeeq, and H. Ali. 2012. "Land Cover Atlas of Pakistan." Pakistan Forest Institute.

absolute terms (that is, the percentage of forest area to total forests in the country), KP is the richest (32.7 percent), followed by Sindh (14.8 percent) and Punjab (12.4 percent). In relative terms (that is, the percentage of forest area to total area of the respective province or administrative area), however, the top three provinces or other administrative areas are AJK (35.1 percent), KP (19.6 percent), and former FATA (19.2 percent).

There are two main types of forests—natural forests (conifers, scrub, riverine, and mangrove forests) and plantations (farmland plantations, roadside plantations and canal-side plantations). The majority, about 4.28 million ha (4.8 percent of the total land area), is natural forest. Irrigated plantations have been raised mainly in Punjab and Sindh Provinces. The plantations make up 4.4 percent of total forest area and 0.3 percent of the total area of the country. 2.4 percent of forests are managed under the protected area system (FAO 20148), which covers 11 percent of the area of Pakistan and comprises game reserves, wildlife sanctuaries, and national parks (Government of Pakistan 2015).9

***Socioeconomic Profile***

According to 2017 population census reports, the total population of Pakistan is approximately 207 million, with the province of Punjab having the highest population with 110 million, followed by Sindh 48 million, Khyber Pakhtunkhwa 30 million and Balochistan 12 million. Pakistan has one of the lowest literacy rates in the world, and stands 160th among world nations. Overall 55% population including 69% male and 45% female is literate. Agriculture is the main source of income and employment in Pakistan with 42% of the population working in the agriculture, fisheries and forestry sectors. This is followed by 35% employment in services (including government) and 22% in industry and associated jobs.

In Pakistan, the only recognized Indigenous Peoples are the Kailasha, residing in the valleys of Bamburet, Birir and Rambur of the Ayun Union Council of Chitral district of the province of Khyber Pakhtunkhwa.

## Stakeholder Consultations

Consultations were carried out with the relevant national and provincial government departments including Pakistan Meteorological Department, Ministry of Climate Change, provincial forestry and wildlife departments, EPAs, and climate change departments. A round of consultation has also been conducted with the NGOs working in the area of climate change. The general feedback from the stakeholders is positive, expressing support for the project. The ESMF also proposes a strategy for keeping the stakeholders' informed and receiving their feedback at various stages of the project through public consultations at the design, construction and operations stage. This will improve the acceptability of the Project by the local community and also ensure their participation in the process of project development. Site specific community level consultations will be carried out during the development of ESMPs for each sub-project.

## Impacts Assessment and Mitigation

An initial assessment has been carried out to identify potential impacts associated with the project, including those with environmental and social dimensions. The assessment has been done for design, construction and operation phase, and accordingly mitigation measures have

8 FAO (Food and Agriculture Organization). 2009. "Pakistan Forestry Outlook Study." Working Paper No. APFSOS II/WP/2009/28, Office of the Inspector General of Forests, Ministry of Environment. Asia Pacific Forestry Sector Outlook Study II.

9 GoP.2015. Pakistan National Biodiversity Strategy and Action Plan. https://www.iucn.org/sites/dev /files/import/downloads/nbsap_1st_draft_23_3_15.pdf

been proposed. An Environmental Management and Monitoring Plan (ESMMP) has been proposed which suggests mitigation measures, monitoring parameters and responsibilities.
The major potential adverse impacts associated with Component 1 are temporary, localized and reversible in nature and related to the soil, noise, air quality, solid waste, increased resource consumption, labor health and safety. Soil erosion and contamination by run-off from construction activities will be avoided through, proper storage of construction materials and proper disposal of contaminated soil. There may also be an impact on air quality from dust and exhaust emissions from soil excavation and movement of heavy vehicles, which will be mitigated by following an Emissions Monitoring Plan. Debris and waste from construction activities may increase the sediment loads into the drainage channels, while accidental leaks/spills of oil/fuel from storage tanks or maintenance vehicles can also pollute surface waters. A Solid Waste Management Plan including debris and construction materials will manage these impacts. Improper waste disposal from the construction site as well as labor camps can lead to various public health concerns including worsened air quality due to waste burning, breeding grounds for vectors, and/or clogging of drains and pollution of subsurface water. A robust solid waste management plan will need to be put in place for construction material as well as for the domestic waste produced by labor camps. Workers' health and safety plan will be prepared for labor, in order to safeguard them from any adverse impacts while handling heavy machinery and toxic material (if any). Construction activities and increased traffic of heavy vehicles may impact public safety of surrounding communities. Proper signage for construction phase, training of construction staff and alternative routes are some of the mitigation measures. Increased consumption of energy and water during construction and operation phase will be managed by including resource efficient building designs and training construction staff on efficient use of water. The MMC is in Islamabad can be located in an earthquake prone area. Designs of these facilities would be made according to the Building Codes of Pakistan with Seismic provision and international best practices to avoid damage caused by earthquakes.

Component 2 activities could have impacts on the land use patterns and could affect the natural ecosystems of the area if not carefully planned and managed. Biodiversity of the project areas could be damaged if unsuitable plant species are introduced causing biological invasion; therefore, the tree species selection should be made based on the principle of applying different approaches to different land and different trees considering endemic ecosystems. Other major impacts could include soil erosion as a result of soil preparation activities. Optimum soil preparation time is given to avoid soil erosion impacts. Moreover, existing flora of the project area could be disturbed if unsuitable afforestation mode is selected, e.g. planting single species in large area would lead to single structure of the forest, narrowing the biodiversity and gene pool.

The Environmental and Social Monitoring and Management Plan (ESMMP) provides details on implementing mitigation measures, defines responsibilities and establishes monitoring mechanisms to ensure all environmental and social impacts are dealt with efficiently and in a timely manner.

## Resettlement Planning Framework and Indigenous Peoples Planning Framework

The project activities mostly do not require land acquisition. Most activities will be carried out on government land, or land obtained through Voluntary Land Donation. Possibility of involuntary resettlement and land acquisition is very rare. Involuntary Resettlement may occur if private land acquisition is required or encroachments are to be removed for up

gradation of PMD facilities, and for the installation of Automatic Weather Stations (AWS) in various parts of the country. A Resettlement Policy Framework (RPF) has been prepared in accordance with the World Bank Operational Policy on Involuntary Resettlement (OP 4.12). The RPF guides the preparation of Abbreviated Resettlement Action Plans (RAP) in case land acquisition or resettlement may occur. RPF includes measures to inform, consult and provide prompt and effective compensation to all Project Affected Persons (PAPs) for losses of assets attributable directly to the project. The RPF includes details of entitlements as applicable for PAPs losing land, structures, other assets and incurring income/livelihood losses and support through the transition period, and development assistance. These affected persons are eligible for rehabilitation subsidies and for the compensation of lost land, structures and utilities along with loss of livelihood.

Under component 2 of the project, there might be interventions that may cause restrictions in access to legally designated parks and protected areas In such cases, the nature of restrictions, as well as the type of measures necessary to mitigate adverse impacts, will be determined with the participation of the displaced persons during the design and implementation of the sub-project, and the implementation partner will prepare a process framework, describing the participatory process for preparation and implementation of the sub-project components; determining the eligibility criteria for displaced persons; identification of measures to assist the displaced persons in their efforts to improve their livelihoods, or at least to restore them; and grievance and conflict resolution mechanism. In case there is a restriction to natural habitats/natural resources in areas which are not legally protected areas, ARAP/RAP will be prepared as per guidelines of the project RPF. However, the probability of such a situation occurring is low, though the exact nature and location of the activities under component 2 are yet to be finalized.

In addition, since the sub-project under Component 2 could be undertaken in the region where indigenous population resides, Indigenous Peoples Policy (OP4.10) has been triggered. Indigenous Peoples Planning Framework (IPPF) has been prepared as a stand-alone document to address the potential impacts on indigenous people and to meet the policy requirement.

## Institutional Arrangements

The activities and investments under the project will be funded through National Disaster Risk Management Fund (NDRMF) from the World Bank. The project envisages the use of existing government structures for implementation and Component 1 focusing on hydro meteorological and climate services will be implemented by the Pakistan Meteorological Department. Component 2 will be implemented by federal and provincial government line departments such as forest and wildlife as well as NGOs and startups.

These Implementing Partners (IPs) would establish dedicated sub-project implementation team to assist in the implementation of the project activities. IPs will be responsible for appointing a Project Director (PD) and hiring of key staff and consultants for respective IPs as per project requirements.

The ESMF will be implemented by IPs and will be supported by one environmental and social safeguards specialist/officer at each IP. Safeguard Unit of NDRMF will have the responsibility to supervise and monitor the ESMF compliance.

The Project Directors will be responsible for the implementation, monitoring and reporting of the ESMMP through the Environmental and Social Safeguards Specialists. The Social

Safeguards Specialist will ensure implementation of the RPF and any other social safeguards related measures. They will be assisted by Environment and Social Officers for sub-components and Database/MIS Officers. Detailed roles and responsibilities of the project team are provided in the ESMF

## Monitoring and Reporting

During project implementation phase, safeguards unit of NDRMF will communicate with the Implementing Partners (IPs) and confirm from time to time that IPs are undertaking the obligation of compliance with ESMF and promptly report to the NDRMF for any actual or potential breach of the compliance requirement after becoming aware of it. Subsequently the NDRMF safeguard team will visit the site to verify and monitor the implementation of ESMP.

Environmental and social performance will be evaluated on a semi-annual basis. The benchmark for performance will be the applicable environmental and social safeguard requirements. NDRMF will ensure that the IP prepares and submits a semi-annual environmental and social monitoring report and will review and assess the IP's performance on environmental and social safeguard issues. If RAPs are prepared for sub-projects, internal monitoring will be carried out routinely by the IPs and their results will be communicated to concerned Project Affected Persons and NDRMF for review and sharing with the World Bank through the quarterly project implementation reports.

NDRMF will engage a third party for ESMF auditing on annual basis with the objective to evaluate the project's overall safeguards performance.

## Capacity Development and Trainings

Capacity building and training of the staff associated with ESMF and RAP implementation will be required for effective environmental and social management. Specific trainings on environmental and social impacts and mitigation will be arranged for the relevant IP staff to deliver their implementation and monitoring responsibilities in an organized and effective manner as per requirement of ESMMP. Trainings will also be held for contractors, sub-contractors, architects, supervision consultants and local authorities

## Budget for ESMF Implementation

A budget for implementation of the ESMF has been proposed. This includes human resources, capacity development and training costs over the course of the project, PPE and maintenance, consultants, environmental testing, preparation of additional environmental management instruments, and budget for External Monitoring/Third Party Validations. The total budget for these activities set in the ESMF is PKR 133.2 Million over the course of the project. The budget for resettlement and financing will be calculated when detailed RAPs are prepared in line with this ESMF.

## Grievance Redress Mechanism

Working relationship between the NDRMF and its implementing partners is to be maintained at the highest level of transparency, professional integrity, accountability and quality, being the core values of the organization. In-order to ensure that IPs are fairly treated during the course of project implementation, it is required to have an adequate Grievance Redress Mechanism in place which will enhance the credibility of partnership. The GRM will be applicable to the whole project phases.

The Grievance Redress Mechanism spans the entire project implementation and will cater to

both directly and indirectly affected population/beneficiaries. The GRM has been designed to address environmental and social problems identified during implementation, it will also cater to manage any disconnects that emerge from the field level and that has significant implications for effective implementation of the sub-project interventions. The office of IPs for sub-project implementation will serve as the secretariat for the Grievance Redress Committee (GRC-Project) that will be responsible for providing oversight on the entire GRM process at a strategic level and monitoring of complaints management. The overall objective of the GRM is therefore to provide a robust system of procedures and processes that provides for transparent and rapid resolution of concerns and complaints identified at the local level. The GRM will be accessible to diverse members of the community, including women, senior citizens and other vulnerable groups. Culturally appropriate communication mechanisms will be used at all sub- project sites both to spread awareness regarding the GRM process as well as complaints management.

## Disclosure

The draft ESMF and RPF will be disclosed on the websites of PMD and NDRMF, and on the World Bank external website. Hard copies of this ESMF, RPF and IPPF will also be shared with the Federal and Provincial Environmental Protection Agencies (EPA), project stakeholders, contractors, Civil Society Organizations etc. A copy of the ESMF, RPF and IPPF will be placed in NDRMF and IPs for public access. The Urdu translation of the Executive Summary of the ESMF will also be distributed to all relevant stakeholders, especially to the communities in the project areas.

# List of Acronyms

| | |
|---|---|
| **AWS** | Automatic Weather Station |
| **CC** | Construction Contractor |
| **DRM** | Disaster Risk Management |
| **DRM** | Disaster Risk Management |
| **DRR** | Disaster Risk Reduction |
| **EMF** | Electromagnetic Field |
| **EPA** | Environmental Protection Agency |
| **ESIA** | Environmental and Social Impact Assessment |
| **ESMP** | Environmental and Social Management Plan |
| **ESMS** | Environmental and Social Management System |
| **ESRI** | Ecosystem Restoration Initiative |
| **FFD** | Flood Forecasting Division |
| **GDP** | Gross Domestic Product |
| **HSE** | Health, Safety and Environment |
| **IEE** | Initial Environmental Assessment |
| **IFC** | International Finance Corporation |
| **MHVRA** | Multi Hazard Vulnerability Risk Assessment |
| **MMC** | Monsoon Monitoring Center |
| **MOCC** | Ministry of Climate Change |
| **NCS** | National Conservation Strategy |
| **NDRMF** | National Disaster Risk Management Fund |
| **NEAP** | National Environmental Action Plan |
| **NEOC** | National Emergency Operations Cell |
| **NEP** | National Environmental Policy |
| **NEQS** | National Environment Quality Standards |
| **NGO** | Non-Government Organization |
| **NIDM** | National Institute of Disaster Management |
| **NIHL** | Noise Induced Hearing Loss |
| **NOC** | No Objection Certificate |
| **PDMAs** | Provincial Disaster Management Authorities |
| **PEPA 97** | Pakistan Environmental Protection Act, 1997 |
| **PEPC** | Pakistan Environmental Protection Council |
| **PIAL** | Prohibited Investment Activities List |
| **PID** | Provincial Irrigation Departments |
| **PIU** | Project Implementation Unit |
| **PMD** | Pakistan Meteorological Department |
| **PNS** | Pakistan National Committee |
| **Pvt** | Private |
| **Radar** | Radio Detection and Ranging |
| **RAP** | Resettlement Action Plan |
| **RF** | Radio Frequencies |

| | |
|---|---|
| **SAR** | Specific Absorption Rate |
| **SGU** | Safeguards Unit |
| **USAR** | Urban Search & Rescue Teams |
| **WAPDA** | Water and Power Development Authority |
| **WSR** | Weather Surveillance Radar |

# List of Units

| | |
|---|---|
| **°C** | Degree Celsius |
| **cm** | Centimetre |
| **db** | Decibels |
| **Kg** | Kilogram |
| **Km** | Kilometer |
| **m** | Meter |
| **µg/m$^3$** | Microgram per cubic meter |
| **%** | Percent |
| **W/kg** | watts per kilogram |
| **mW/m$^2$** | milliwatts per square metre |

# Table of Contents

**Chapter 1. Introduction ..... 1**
1.1. Background ..... 1
1.2. Need for the ESMF/RPF ..... 2
1.3. Structure of the ESMF ..... 3
**Chapter 2. Project Description ..... 4**
2.1. Project Components ..... 4
2.1.1. Component 1: Hydro-Meteorological and Climate Services ..... 4
2.1.2. Component 2: Nature-based Solutions and Climate Adaptation ..... 6
2.1.3. Project Area ..... 7
2.2. Analysis of Project Alternatives ..... 7
2.2.1. No Project Option ..... 7
2.2.2. Project Site Alternatives ..... 8
**Chapter 3. Regulatory Framework ..... 9**
3.1. Constitutional Provision ..... 9
3.2. National and Provincial Laws ..... 9
3.2.1. Environmental Protection Acts ..... 9
3.2.2. Environmental Protection Agency Review of IEE & EIA Regulations, 2000 ..... 10
3.2.3. Environmental Quality Standards, 2000 ..... 10
3.2.4. Forest Policy, Laws and Rules ..... 10
3.2.5. Occupational Health & Safety Laws ..... 11
3.2.6. The Antiquities Act (1975) ..... 11
3.2.7. Explosives Act 1884 ..... 12
3.2.8. Employment of Child Act, 1991 ..... 12
3.2.9. Pakistan Penal Code, 1860 ..... 12
3.2.10. Building Code of Pakistan 1986 (Seismic Provisions-2007) ..... 12
3.2.11. Land Acquisition Act 1894 ..... 13
3.3. World Bank Safeguard Policies ..... 13
3.3.1. OP /BP4.01 Environmental Assessment ..... 14
3.3.2. OP /BP4.04 Natural Habitat ..... 15
3.3.3. WB OP 4.36 Forestry ..... 15
3.3.4. WB OP 4.12 (Involuntary Resettlement) ..... 16
3.3.5. OP /BP4.10 Indigenous People ..... 16
3.3.6. BP 17.50 World Bank Disclosure Policy ..... 17
3.4. Environmental Codes of Practice ..... 17
3.5. Other World Bank Guidelines & Policies ..... 17
3.5.1. WB Committee on Disability-Inclusive Development ..... 17

3.5.2. Labor Influx ..... 18
3.5.3. WB EHS Guidelines ..... 18
3.5.4. World Bank Group Gender Strategy (2016-2023) ..... 18
3.6. International Conventions / Agreements ..... 18
3.7. Gap Analysis of Land Acquisition Act & World Bank Policies ..... 19
3.8. NDRMF Guidelines ..... 20
**Chapter 4. Assessment of Environmental and Social Baseline ..... 22**
4.1. Project Area ..... 22
4.2. Physical Environment ..... 22
4.2.1. Climate ..... 22
4.2.2. Topography ..... 22
4.2.3. Surface Water Hydrology ..... 23
4.2.4. Natural Hazard Vulnerability ..... 23
4.2.5. Ground Water ..... 24
4.2.6. Air Quality and Noise ..... 25
4.3. Ecological Environment ..... 25
4.3.1. Biodiversity ..... 25
4.3.2. Flora ..... 26
4.3.3. Fauna ..... 26
4.3.4. Forests ..... 28
4.3.5. Protected Areas ..... 30
4.4. Socioeconomic Profile ..... 32
4.4.1. Demography ..... 32
4.4.2. Literacy and Education ..... 32
4.4.3. Health & Nutrition ..... 33
4.4.4. Occupation ..... 33
4.4.5. Gender ..... 34
4.4.6. Indigenous Peoples ..... 34
**Chapter 5. Stakeholders Consultations and Information Disclosure 35**
5.1. Introduction ..... 35
5.2. Objectives of Stakeholder Consultation ..... 35
5.3. Consultation Process ..... 35
5.3.1. Identification and Classification of Stakeholders ..... 35
5.3.2. Classification of Stakeholders ..... 36
5.3.3. Methodology ..... 36
5.4. Consultation Findings ..... 37
5.4.1. Consultation with PMD ..... 37
5.4.2. Consultation with Relevant Public Sector Entities ..... 38
5.4.3. Consultation with NGOs ..... 38

5.5. Stakeholders Consultation Framework .....39

**Chapter 6. Environmental and Social Impact Assessment and Mitigation Measures.....41**

6.1. Pakistan Hydro-meteorological and Ecosystem Restoration Project .....41

6.1.1. Component 1: Hydro-meteorological and Climate Services .....41

6.1.2. Component 2: Nature-based Solutions and Climate Adaptation .....41

6.2. Impact Assessment Matrix .....41

6.3. Potential Environmental and Social Impacts during Design and Mitigation .....43

6.3.1. Biodiversity and Natural Resource .....43

6.3.2. Land Acquisition, Resettlement, Loss of Livelihoods .....44

6.3.3. Natural Disasters .....45

6.3.4. Water /Electricity/ Natural Gas/ Fuel Consumption .....46

6.3.5. Universal Accessibility .....46

6.4. Potential Environmental and Social Impacts during Construction and Mitigation46

6.4.1. Landscape/Soil .....46

6.4.2. Ambient Air Quality and Climate .....47

6.4.3. Surface/Ground Water Resources .....48

6.4.4. Water /Electricity/ Natural Gas and Fuel Consumption .....49

6.4.5. Solid Waste Generation .....49

6.4.6. Noise Levels .....50

6.4.7. Flora and Fauna .....51

6.4.8. Public Health and Safety .....52

6.4.9. Workers Health and Safety .....53

6.4.10. Physical /Cultural/ Archeological Resources .....53

6.4.11. Traffic Management .....54

6.4.12. Labor Influx .....54

**6.5. Potential Environmental and Social Impacts during Operations and Mitigation .....56**

6.5.1. Electromagnetic Field Generated .....56

6.5.2. Air Quality and Climate .....57

6.5.3. Surface/ Ground Water .....57

6.5.4. Solid Waste .....57

6.5.5. Electricity/ Water /Natural Gas /Fuel Consumption .....58

6.5.6. Ecological Impacts (Flora and Fauna) .....58

6.6. Environmental and Social Monitoring and Management Plan .....58

6.6.1. Mitigation and Monitoring of Environmental and Social Impacts .....58

**Chapter 7. Environmental and Social Screening.....70**

7.1. Sub-Project Screening and Impact Assessment Process .....70

7.2. ESMP Preparation Guidelines .....72

7.3. Planning Review and Approval ..... 74
**Chapter 8. Resettlement Policy Framework ..... 75**
8.1. Involuntary Resettlement under the Project ..... 75
8.1.1. Resettlement Impact Categorization ..... 75
8.2. Voluntary Land Donation ..... 76
8.2.1. Community Forestation Programme ..... 76
8.2.2. Need for Voluntary Land Donation ..... 77
8.2.3. Due Diligence ..... 77
8.2.4. Voluntary Land-Use Agreement ..... 78
8.2.5. Process Flow for Land Use through VLD ..... 78
8.2.6. Monitoring of Voluntary Land Donation ..... 78
8.2.7. Grievance Redress Mechanism ..... 79
8.3. Abbreviated Resettlement Action Plan ..... 79
8.3.1. Eligibility and Cut-off-Date ..... 79
8.3.2. Compensation Entitlement Matrix ..... 80
8.3.3. Public Consultation and Participation ..... 82
8.3.4. Implementation Arrangements ..... 83
8.3.5. Grievance Redressal Mechanism (GRM) ..... 83
8.3.6. Preparation of Monitoring, Evaluation and Reporting Plan ..... 83
8.3.7. Cost Estimates ..... 83
8.4. Process Framework ..... 83
**Chapter 9. Institutional Arrangements ..... 85**
9.1. Project and ESMF Implementation ..... 85
9.2. Implementing Partners ..... 85
9.3. ESMMP Institutional Arrangement ..... 86
9.3.1. Roles and Responsibilities of PIU ..... 86
9.3.2. Roles and Responsibilities of Design Engineers ..... 88
9.3.3. Roles and Responsibilities of Contractors ..... 88
9.4. Monitoring Plan ..... 88
9.4.1. Internal Monitoring– ESMMP ..... 88
9.4.2. Internal Monitoring - RAP ..... 89
9.4.3. External Monitoring/Third Party Validation – ESMMP ..... 90
9.4.4. External Monitoring/Third Party Validation – RAP ..... 90
9.4.5. Reporting ..... 90
9.5. Capacity Development and Trainings ..... 91
9.5.1. Environmental and Social Mitigation and Monitoring Plan ..... 91
9.5.2. Resettlement Planning Framework (RPF) ..... 92
**Chapter 10. ESMF implementation Budget ..... 94**

**Chapter 11. Grievance Redress Mechanism ..... 95**
11.1. Overview and scope ..... 95
11.2. Objectives of the Grievance Redress Mechanism ..... 95
11.3. Communication & Awareness on GRM ..... 95
11.4. Proposed Mechanisms ..... 95
11.5. Procedures ..... 96
11.6. Grievance Closure ..... 97
**Chapter 12. Disclosure ..... 98**

# List of Tables

Table 3.1: Relevant sections covering IEE and EIA in provincial legislations ..... 10
Table 3.2: Safeguard Policies Applicability ..... 13
Table 3.3: International Conventions ..... 18
Table 3.4: WB OP 4.12 Involuntary Resettlement & Pakistan Land Acquisition Act ..... 19
Table 4.1: Climate Zones in Pakistan ..... 22
Table 4.1: Endemic and Threatened Species in Pakistan ..... 28
Table 4.4 Distribution of Forests in Various Provinces and Other Administrative Areas ..... 29
Table 4.2: List of National Parks ..... 30
Table 4.3: Protected Areas of Pakistan by Province/Territory ..... 31
Table 4.5: Provincial Results of Census 2017 ..... 32
Table 5.1: List of Stakeholders ..... 36
Table 5.2: Public Consultation/ Participation Framework ..... 39
Table 6.1: Potential Environmental and Social Impacts (Prior Mitigation) ..... 41
Table 6.2: Noise Impact ..... 51
Table 6.3: Environmental and Social Mitigation Implementation and Monitoring Plan ..... 59
Figure 7.1: Procedure Flow – Project Screening and Categorization ..... 72
Table 8.1: Entitlement Matrix ..... 80
Table 9.1: Roles and Responsibilities ..... 86
Table 9.2: Capacity Building and Training Plan ..... 91
Table 9.3: Capacity Building and Training Plan for RAP ..... 92
Table 10.1:ESMF Implementation Budget ..... 94

# List of Figures

Figure 4.1: Seismic Zones of Pakistan ..... 23
Figure 4.2: Impacted Area of Floods 2010 ..... 24
Figure 4.3: Forest Cover in Pakistan ..... 30
Figure 4.4: Literacy Ratio Map of Pakistan ..... 33

# List of Annex

**Annexure 1** Project Screening Checklist (Environmental, Social, Land Acquisition, Indigenous Peoples, Gender)

**Annexure 2** Environmental Code of Practices

**Annexure 3** Flood Resistant Design Guidelines

**Annexure 4** Asbestos Handling Procedure

**Annexure 5** PCR Framework and Chance Find Procedures

**Annexure 6** Project Proposal Evaluation criteria and Scoring Sheet (Gender and Inclusion)

**Annexure 7** Gender Mainstreaming Categorization

**Annexure 8** Sample Terms of References for Environment Specialist (IP)

**Annexure 9** Voluntary Land Donation Form

**Annexure 10** Consultation Report

# Chapter 1. Introduction

## 1.1. Background

Over the last two decades Pakistan has made considerable progress in reducing absolute poverty and improving shared prosperity, but still a significant portion of the population remains poor or vulnerable. Between 1991 and 2011 the number of people with an income below $1.25 per day was more than halved;[10] and between 2002 and 2011 the percentage of the population below the national poverty level fell from 34.7 to 13.6 percent.[11]

A key dimension of social vulnerability in South Asia is exposure to hydrological and meteorological (hydromet) hazards including storms, floods, and droughts. Across South Asia, the number of disasters has quadrupled over the past four decades, causing over 800,000 deaths and US$80 billion in damages[12]—equivalent to an estimated 2–6 percent of GDP—and slowing economic growth and poverty reduction.[13] Impacts of climate change are already manifest in Pakistan, and expected to get further significantly adverse, as the country ranks 7th on the climate risk index[14]. The frequency and quantity of precipitation in Pakistan is becoming increasingly unpredictable. It continues to be one of the most flood-prone countries in the South Asia Region (SAR); it suffered US$18 billion in losses between 2005 and 2014 (US$10.5 billion from the 2010 floods alone), equivalent to around 6 percent of the federal budget.[15] By 2030, annual average flood damages are projected to increase five-fold relative to 2010.[16] In addition, these extreme weather events create vulnerabilities in major natural asset-based sectors. Hydromet hazards have been coupled with rapid population growth and uncontrolled urbanization, leading to a disproportionate and growing impact on the poor.

Ecosystems play an important role for climate change adaptation in addition to mitigation through provisioning multiple functions such as climate, air and water regulation, food production, supply of the forest products. To keep these important functions, it is important to maintain the ecosystems stable and healthy; degraded ecosystems are not capable of providing quality ecosystems services. Maintenance, restoration and sustainable use of ecosystems therefore form the basis of "Nature-based Solution (NbS)" for climate change mitigation and adaptation.

According to FAO (2010)[17], forest cover in Pakistan has significantly declines in the past few decades, going down from 2.5 million ha in 1990 to only 1.68 million ha in 2010. Including

[10] http://documents.worldbank.org/curated/en/886791468083329310/Pakistan-Country-partnership-strategy-for-the-period-FY2015-19
[11] Ibid.
[12] Not including indirect losses.
[13] World Bank Program Brief: South Asia Regional Program on Hydromet, Climate Services and Resilience (2017). http://www.worldbank.org/en/region/sar/brief/south-asia-hydrological-and-meteorological-hydromet-resilience-program
[14] Global Climate Risk Index 2017 https://germanwatch.org/en/download/16411.pdf
[15] World Bank (2015) *Fiscal Disaster Risk Assessment Options for Consideration: Pakistan*. Chapter 1, page 2. https://openknowledge.worldbank.org/handle/10986/21920
[16] http://floods.wri.org/#/country/170/Pakistan
[17] FAO (Food and Agriculture Organization). 2009. "Pakistan Forestry Outlook Study." Working Paper No. APFSOS II/WP/2009/28, Office of the Inspector General of Forests, Ministry of Environment. Asia Pacific Forestry Sector Outlook Study II.

other wooded land, the forest area in 2010 became 3.1 million ha, still much lower than the figures reported by national sources. Forest resources continue to deteriorate both qualitatively and quantitatively because of increasing pressure from a rising population and associated needs. Significant areas of forest lands have been transferred to non-forest areas for commercial purposes, including agriculture, infrastructure, defense, and tourism (FAO 2009). Therefore, rehabilitation and maintenance of forests is one of the highest priorities to keep and improve ecosystem services.

It is critical to improve the quality and accessibility of weather, water, and climate information services to increase economic productivity, and improve climate resilience. Climate-resilient development requires stronger institutions and a higher level of observation, forecasting, and service delivery capacity; these could make a significant contribution to safety, security, and economic well-being.[18] In addition, nature based climate adaptation contributes to preserve ecosystem services.

In these contexts, the Pakistan Hydro-Meteorological and Ecosystem Restoration Project expects to improve hydro-meteorological information and services, strengthen forecasting and early warning systems, and improve dissemination of meteorological and hydrological forecasts, warnings and advisory information to stakeholders and end-users as well as to strengthen climate resilience through introduction of nature based solutions, mainly by conserving and protecting forests and improving ecosystems and biodiversity. The project has two main components and will be implemented over a period of five years.

In support of climate change adaptation, the project will improve 1) PMD's capacity to collect and analyze data and inform stakeholders so they can more efficiently use this information in planning and decision-making, and 2) MoCC and provincial governments' capacity to plan and implement nature-based climate adaptation measures to strengthen climate resilience through protection of ecosystem services. While this project will focus its support on DRM, forest, agriculture, and water as its main beneficiaries, many other sectors—including energy, transport, and health—can benefit from improved hydro-meteorological services to promote adaptation to climate change.

## 1.2. Need for the ESMF/RPF

The project focuses on the improvement of weather and hydrological forecasting processes and numerical prediction systems, and refurbishment of PMD office and facilities. Components 1 of the project (detailed in Chapter 2) envisages some physical low-scale interventions for the establishment and refurbishment of PMD in Punjab, Sindh, Balochistan and KPK province, and installation of Automatic Weather Stations (AWS) across Pakistan. Component 2 activities will involve afforestation, reforestation, and regeneration of natural forest such as protected forests, scrub and temperate forests, mangrove, vegetation and soil conservation in hilly and river catchment areas and protection of rangeland.

[18]Upgrading all hydro-meteorological information and early-warning systems in developing countries has been estimated to have the potential to save 23,000 lives annually and provide US$3–30 billion per year in economic benefits—see Hallegatte (2012). "A Cost Effective Solution to Reduce Disaster Losses in Developing Countries: Hydro-meteorological Services, Early Warning, and Evacuation." Policy Research Working Paper 6058, World Bank, Washington, DC.

The project is assigned as *Category B*, due to the limited environmental and social impacts that could be linked to temporary and localized environmental degradation and social disturbance during civil works. In line with the environmental legislation of Pakistan as well as the World Bank (WB) safeguard policies, an Environmental and Social Management Framework (ESMF) for the project is prepared. This ESMF assesses environmental and social impacts related to the Project, and outlines an Environmental and Social Management and Monitoring Plan (ESMMP). The ESMF includes institutional arrangements required to implement the environmental actions and presents monitoring requirements for effective implementation of mitigation measures; describes training needs and specific reporting and documentation requirements; and proposes a third-party validation mechanism. The ESMF includes a Resettlement Policy Framework to address any land acquisition and involuntary resettlement that may occur due to the Project. A separate Indigenous People Planning Framework (IPPF) has also been prepared for the project.

## 1.3. Structure of the ESMF

This Environmental and Social Management Framework consists of 12 chapters. Chapter introduces the project and ESMF, including project background and need for the project. Chapter 2 provides a detailed description of the project, its sub components and analysis of project alternatives. Chapter 3 presents a review of national regulatory framework, World Bank safeguard policies, environmental codes of practice and international covenants and agreements. Chapter 4 is an assessment of national environmental and social baselines. Chapter 5 provides information on stakeholder consultations conducted for the project, and Stakeholders Consultation Framework. Chapter 6 presents an assessment of potential environmental and social impacts, proposed mitigation measures, and environmental and social management and monitoring plan. Environmental and social screening for sub-projects are included in Chapter 7. Chapter 8 is the Resettlement Policy Framework for possible land acquisition or involuntary resettlement caused by sub-project activities. Chapter 9 presents institutional arrangements including roles and responsibilities for ESMF implementation, monitoring of ESMF and capacity development and training of project team and contractors. Chapter 10 presents the ESMF implementation budget. Chapter 11 is the Grievance Redress Mechanism for stakeholders and general public and Chapter 12 presents Disclosure requirements.

# Chapter 2. Project Description

This chapter provides a description of project components and location of the project.

## 2.1. Project Components

The Pakistan Hydro-Meteorological and Ecosystem Restoration Project has two main components:

- Component 1: Hydro-meteorological & Climate Services
- Component 2: Nature Based Solutions & Climate Adaptation

The main components comprise of a number of sub-components, which in turn entail numerous interventions in key thematic areas. The project will be implemented over a period of five years. The project components and sub-components are detailed below:[19]

### 2.1.1. Component 1: Hydro-Meteorological and Climate Services

The objective of this component is to improve the capability and thereby performance of the Pakistan Meteorological Department (PMD) to understand and make use of meteorological and hydrological information for decision making. This objective will be achieved through strengthening institutional setup and building capacity of human resources at the PMD. The component will include following 3 sub-components:

#### *Sub-Component 1.1: Institutional Strengthening, Capacity Building*

This component is focused on building capacity of the relevant departments besides disseminating information to the end-users and general public. It targets the following thematic areas:

1.1.A: Institutional strengthening and development of a legal and regulatory framework

1.1.B: Capacity building and training of PMD and main stakeholders

1.1.C: Outreach and public education, awareness raising, marketing

#### *Sub-Component 1.2: Modernization of the Observation Infrastructure, Data Management and Forecasting Systems*

This sub-component aims to upgrade and expand the meteorological, agro-meteorological and hydrological observations networks and ensuring that these networks are well functioning and interoperable. The sub-component will include following 5 sub-components:

1.2.A: Technical modernization of the observation networks

1.2.B: Modernization of PMD data management, communication, and ICT system

1.2.C: Improvement of the weather forecasting process, including numerical weather prediction system

[19] For additional details, please refer to the Project Document.

1.2.D: Improvement of hydrological forecasting system, including flood modeling system

1.2.E: upgradation and refurbishment of PMD facilities and offices

Bulk of the activities in this sub-component include procurement and installation of goods such as monitoring equipment and ICT. However, this sub-component will include some physical works that may have site specific environmental and social impacts. Sub-component 1.2A will support the expansion and upgrade of the prioritized stations of the network, expansion of Doppler radar network, restoration of upper air observations, installation of wind profilers, improvement of hydrological stations and systems, and expansion and re-equipment of agro-meteorological network. Sub-component 1.2E will establish the Monsoon Monitoring Centre in Islamabad, as well as up gradation of Flood Forecasting Division (FFD) to National Flood Forecasting Center (NFFC) and establishment of 5 Regional Flood Forecasting Centers (RFFC). The activities will also include the refurbishment of PMD offices including IMG and FFD.

***Sub-Component 1.3: Enhancement of the PMD Service Delivery & Building Partnerships with the Private Sector***

The objective of this component is to enhance the service delivery system of PMD and improve the credibility and penetration of PMD's services to the public and decision makers and potentially generate new sources of revenues in the future. In addition, improving information customization and dissemination to address the needs of consumers is expected to produce climate change adaptation co-benefits in terms of reducing vulnerability and improving preparedness to adverse hydro-meteorological events. Priority target end-users include: agro-meteorological information services; food security; emergency and disaster risk management; water resource management; and aviation. It will include following 6 sub-components:

1.3.A: Introduction of Public Weather and Hydrological Services (water resources, disaster risk management (DRM), agriculture, irrigation, media, civil aviation, transport, health, energy, etc.)

1.3.B: Strengthening of end-to-end early warning system (EWS) including a regular post-event review process

1.3.C: Introduction of impact-based forecast and warning services in support of operations of DRM and other stakeholders

1.3.D: Development of Agriculture and Climate Advisory Service (ACAS), including drought monitoring

1.3.E: Creation of the National Framework of Climate Services (NFCS)

1.3.F: Strengthening Services for Aviation

***Sub-Component 1.4: Project Management, Systems Integration, Monitoring and Implementation Support of PMD***

The objective of this component is to develop detailed designs and integration of the modernization with other stakeholder systems—including donors, such as JICA, China and

USAID as well as other government departments including PADs, PIDs, WAPDA. In order to achieve this objective, the activities will comprise the hiring of a systems integrator to provide procurement and implementation support, guidance, technical advice and support to PMD operations and the overall modernization program, and support for project management, monitoring, reporting and evaluation of sub-components 1.1, 1.2 and 1.3 described above. There are three sub-components:

1.4.A: Assessment of existing systems and design of an optimum composite observation network, forecasting and service delivery processes (weather, climate, and hydrological)

1.4.B: Project management, monitoring, reporting and evaluation of components A, B, and C

1.4.C: Operations and maintenance (O&M) costs

### 2.1.2. Component 2: Nature-based Solutions and Climate Adaptation

This component is to support the Ministry of Climate Change to design and roll-out Nature-based Solutions to enhance climate resilience and adaptation through reinforcing ecosystem services as well as to support climate actions carried out by NGOs, community and startups. The National Disaster Risk Management Fund will be responsible for implementing the component on behalf of MoCC, as custodian of the ecosystem restoration and climate adaptation fund. This component will comprise on the following four sub-components:

#### *Sub-Component 2.1: Promotion of Nature-based Solutions*

This sub-component will support the activities proposed under Eco-system Restoration Initiative (ESRI) - a newly established government program to manage risks of environmental degradation and climate change. PHCSPhas six thematic areas[20], however, the project will support the activities under the thematic area i and iii, i.e. forest and biodiversity conservation and preventing land degradation. Forest conservation will include afforestation, reforestation, and regeneration of natural forest and soil conservation in hilly and river catchment areas and protection of rangeland. Biodiversity conservation and preventing land degradation will include landscape restoration, habitat improvement and increasing connectivity between natural areas, conservation and management of protected areas and other natural habitats, promotion of community based conservation initiatives, awareness raising and monitoring.

Potential locations and methodology for forest conservation, and biodiversity and land protection areas have been pre-identified by the provincial governments. Actual interventions will be selected through prioritization and selection process carried out between NDRMF and provincial governments during project implementation.

#### *Sub-Component 2.2: Community Resilience to Climate Change*

The activities would be implemented by NGOs or other community-based organizations to build climate resilience of communities , and/or ecosystems restoration on which they rely.

[20] PHCSPthematic areas are: i) afforestation ii) integrated water management, iii) conserving biodiversity & mitigating land degradation, iv) conserving marine life & promoting blue economy, v) promoting eco-tourism, and vi) electric vehicle .

The examples of the activities to be supported would include alternative income-generating activities to reduce pressure on natural resources and diversify income sources, piloting sustainable agriculture practices and promoting land conservation, trainings and community level interventions, empowering women to reduce vulnerability and to mitigate risks from climate change.. It would include trainings and community level interventions to mitigate risks from climate change. NDRMF has an existing mechanism for selection of NGOs, which would be built upon for implementation of this sub-component.

***Sub-Component 2.3: Innovation on Climate Smart Technology***

This sub-component would introduce a seed funding for tech startups around climate resilience, working with partners such as the National Incubation Center.

***Sub-Component 2.4: Project Management and Capacity Building***

Under this sub-component, the activities under ESRI, other than those supported in sub-component 2.1, will be further analyzed and implementation plan will be prepared. Long term financial mechanisms for implementation of PHCSPwill be also studied. Furthermore, monitoring of the carbon sequestration achieved through forest conservation will be carried out building upon the outcome of Bank funded Pakistan REDD+ Preparation Project.

### 2.1.3. Project Area

The Component 1 will be implemented in Islamabad Capital Territory, Punjab, Sindh, Baluchistan, KPK provinces and northern parts of the country. Initially, under Component 1, the project infrastructure development includes the establishment of Monsoon Monitoring Center Islamabad and Weather Surveillance Radar (WSR) in Lahore, which will be built on existing PMD owned offices. Upgradation of other PMD facilities and installation of AWS will most likely be at existing PMD stations and offices or government owned land in Pakistan. The locations of additional infrastructure development will be finalized in the second phase of the project. However, these activities will be implemented in the existing PMD owned land except AWS which requires less than $1m^2$ land.

Likewise, Component 2 i.e. Nature Based Solutions and Climate Adaptation will be implemented throughout Pakistan. Potential locations and methodology for forest conservation, biodiversity and land protection areas have been pre-identified by the provincial governments while locations for the activities under the remaining subcomponents will be strategically identified and prioritized in implementation phase.

## 2.2. Analysis of Project Alternatives

### 2.2.1. No Project Option

Pakistan is ranked $7^{th}$ amongst the countries most affected by climate change. The World Resources Institute (WRI), further testifies Pakistan's vulnerability to extreme weather events ranking the country in the list of top 15. The intensity and frequency of climate change induced disasters and extreme weather events are recorded on rise in recent decades. The frequency and quantity of precipitation in Pakistan is becoming increasingly unpredictable.

Pakistan experienced damages worth an estimated USD 18 billion between 2005 and 2014 (US$ 10.5 billion from the 2010 floods alone), according to World Bank and Asian Development Bank reports.

Hydromet hazards have been coupled with rapid population growth and uncontrolled urbanization, leading to a disproportionate and growing impact on the poor. The severity of these hazards is likely to be exacerbated due to climate change. In addition, these extreme weather events create vulnerabilities in major natural asset-based sectors.

In view of the vulnerability of the country to multiple disasters and climate-related risks, strengthening of Disaster Risk Management system in Pakistan is considered strategic in assisting the Government to achieve its national and global commitments, especially the Five-Year Development Plan of the Government of Pakistan (GoP), SDGs, Nationally Determined Contributions (NDCs) and the Sendai Framework for Disaster Risk Reduction (SFDRR).

If "no-project" option is adopted, the situation will continue to grow from bad to worse. By 2030, annual average flood damages are projected to increase five-fold relative to 2010.[21] Therefore, this option is deemed inappropriate.

### 2.2.2. Project Site Alternatives

Alternative project sites are considered when the project location is sensitive to environmental and/or social impacts associated either to the construction works or due to the operation of the facility constructed. Under component 1, the project currently suggests physical works to install new Weather Surveillance Radar (WSR) in Lahore and construct a Monsoon Monitoring Center; and proposes the installation of Automatic Weather Stations across the country, the locations of which are not confirmed yet. An analysis of alternative locations for sub-projects locations will be provided in the ESMPs prepared for each specific project site to meet the safeguards requirements of the World Bank and NDRMF.

Similarly, specific locations for activities under component 2 have not been finalized yet, and will be strategically identified and prioritized in collaboration with implementing partners.

[21] http://floods.wri.org/#/country/170/Pakistan

# Chapter 3. Regulatory Framework

This chapter presents a review of national and provincial regulatory frameworks and the World Bank's safeguard policies. These legislations and safeguard policies, and their relevance to the proposed project, are briefly discussed below.

## 3.1. Constitutional Provision

The enactment of comprehensive legislation on the environment, covering multiple areas of concern, is an on-going phenomenon in Pakistan. Whereas, a basic policy and legislative framework for the protection of the environment and overall biodiversity in the country is now in place. Besides environmental statutes, a number of laws governing the social performance of the project also exist, e.g. Land Acquisition Act.

After the 18th amendment to the Constitution in 2010, the power to legislate and decide on the subject of "environmental pollution and ecology" now lies with the provincial government, however, climate change remains under federal jurisdiction. The following description presents a brief overview of the relevance of various existing national policies, legislation and guidelines:

## 3.2. National and Provincial Laws

### 3.2.1. Environmental Protection Acts

The Pakistan Environmental Protection Act (PEPA) is the apex environmental law in the country, and provides for the protection, conservation, rehabilitation and improvement of the environment, for the prevention and control of pollution, and for promotion of sustainable development. Section 12 of the Act requires preparation of Environmental Impact Assessment (EIA) or Initial Environmental Examination (IEE) before commencement of projects likely to cause adverse environmental effects. However, after the 18th amendment, environment has become a provincial subject, therefore, the provincial laws will govern the project activities in the respective provinces:

- Pakistan Environmental Protection Act (For Islamabad Capital Territory)
- Punjab Environmental Protection Act (Amendment 2012)
- Sindh Environmental Protection Act 2014
- Baluchistan Environmental Protection Act 2013
- KPK Environmental Protection Act 2014

The relevant sections of IEE and EIA in provincial acts is given in **Table 3.1.**

**Table 3.1: Relevant sections covering IEE and EIA in provincial legislations**

| EPAs | IEE/EIA Section |
|---|---|
| Punjab Environmental Protection Act (Amendment 2012) | Section 12 |
| Sindh Environmental Protection Act 2014 | Section 17 |
| Baluchistan Environmental Protection Act 2013 | Section 15 |
| KPK Environmental Protection Act 2014 | Section 13 |
| Pakistan Environmental Protection Act (For Islamabad and Federally Administered Tribal Areas) | Section 12 |

### 3.2.2. Environmental Protection Agency Review of IEE & EIA Regulations, 2000

These Regulations define procedures for preparation, review and approval of environmental assessments. The projects falling under any of the categories listed in Schedule-I require preparation of Initial Environmental Examination (IEE) report, whereas those falling under categories listed in Schedule-II require preparation of Environmental Impact Assessment (EIA).

Requirement of an IEE will be determined by the scope of specific project activities based on the above mentioned regulations. If an IEE is conducted and submitted to the EPAs, it is shared with public by virtue of law. Therefore, disclosure requirements of both Bank/NDRMF and local regulatory requirement will be fulfilled. Apart from that information about different projects under progress are monitored by the M&E Directorate and they publish some data on their website.

### 3.2.3. Environmental Quality Standards, 2000

The NEQS have been adopted by all the provincial environmental protection departments/agencies; therefore, it will be followed for the project component 1.2 and 2.2. According to the World Bank policy compliance to all local statutory requirements is compulsory during project execution. NEQS first promulgated in 1993 and have been amended in 1995 and 2000. They have been revised and the latest NEQS were issued in 2010. The NEQS relevant to the project are:

- Maximum allowable concentration of pollutants (32 parameters) in municipal and liquid industrial effluents discharged to inland waters, sewage treatment facilities, and the sea (three separate sets of numbers);
- Maximum allowable concentration of pollutants (16 parameters) in gaseous emissions from industrial sources;
- Maximum allowable concentration of pollutants (two parameters) in gaseous emissions from vehicle exhaust and noise emission from vehicles; and
- Maximum allowable noise levels.

### 3.2.4. Forest Policy, Laws and Rules

Historically, forestry remained a provincial subject even after independence of Pakistan. In the Constitution of Islamic Republic of Pakistan 1973, forestry is purely a provincial subject

and not impacted by the 18th amendments in the Constitution (2010). However the federal support to federating units for meeting international obligations and filling their financial gaps is widely acknowledged. Climate mitigation and adaptation measures are the focus of National Forest Policy in view of Pakistan's high vulnerability to adverse impacts of climate change, in particular to extreme events.

The Forest Act 1927 provides protection and ensures conservation of reserved and protected forests located within the project area. The Act empowers the provincial forest departments to prohibit the clearing of forest for cultivation, grazing, hunting, removing forest produce; quarrying, felling, lopping and topping of trees, branches in reserved and protected forests

The laws and rules relevant for the protection and conservation of forest, fisheries and wildlife in the country are listed below.

- The Forest Act 1927 Amended 2016
- Hazara Forest Act, 1936.
- KPK Forest Ordinance 2002
- Sindh Forest Act 2012
- Balochistan Forest and Wildlife Act 2014
- Punjab Firewood and Charcoal (Restriction) Act 1964
- Punjab Forest (Sale of Timber) Act 1913
- Punjab Plantation and Maintenance of Trees Act 1974
- Punjab Land Preservation Act
- Protection of Trees & Brushwood Act 1949

### 3.2.5. Occupational Health & Safety Laws

In Pakistan, the OHS in different sectors is covered in various laws. There is no single comprehensive law covering OHS. The following pieces of legislation could be relevant to the project in terms of OHS aspects, however, the exact applicability of these to the specific project components is subject to discussion and legal opinion:

- Factories Act 1934
- North-West Frontier Province Factories Rules 1975
- West Pakistan Hazardous Occupations Rules 1963
- Provincial Employees Social Security (Occupational Diseases) Regulation 1967
- Workmen Compensation Act 1923 and Rules 1961

### 3.2.6. The Antiquities Act (1975)

The protection of cultural resources in Pakistan is ensured by the Antiquities Act of 1975. Antiquities have been defined in the Act as ancient products of human activity, historical sites, or sites of anthropological or cultural interest, national monuments etc. The act is designed to protect antiquities from destruction, theft, negligence, unlawful excavation, trade and export. The law prohibits new construction in the proximity of a protected antiquity and

empowers the Government of Pakistan to prohibit excavation in any area, which may contain articles of archaeological significance. Under the Act, the project proponents are obligated to ensure that no activity is undertaken in the proximity of a protected antiquity, and report to the Department of Archaeology if any archaeological discovery is made during the course of the project.

### 3.2.7. Explosives Act 1884

Under the Explosives Act 1884, the project contractors are bound by regulation on properly and securely handling, transporting and using explosive for quarrying, blasting and other purposes.

### 3.2.8. Employment of Child Act, 1991

Article 11(3) of the constitution of Pakistan prohibits employment of children below the age of 14 years in any factory, mine, or any other hazardous employment. In accordance with this article, the ECA 1991 disallows such child labor in the country. The ECA defines a child to mean a person who has not completed his/her fourteenth year of age. The ECA states that no child shall be employed or permitted to work in any of the occupations set forth in the ECA (such as transport sector, railways, construction, and ports) or in any workshop wherein any of the processes defined in the act is carried out.

### 3.2.9. Pakistan Penal Code, 1860

The Pakistan Penal Code (PPC) deals with offences where public or private property and/or human lives are affected due to the intentional or accidental misconduct of an individual or body of people. In the context of environment, the PPC empowers the local authorities to control noise, noxious emissions and disposal of effluents. The Penal Code can provide a basis to coordinate project activities with the local authorities to ensure that the construction activities do not become a cause of public nuisance or inconvenience. Pollution offences can still be tried under the relevant sections of PPC, 1860, as they have not been specifically repealed by a subsequent legislation.

### 3.2.10. Building Code of Pakistan 1986 (Seismic Provisions-2007)

The Pakistan Engineering Council governs the application of Building Code of Pakistan (Seismic Provisions-2007). Prior to the start of construction, the proposed sub project will take design approval from PEC. The obligates following;

- The provisions of the Building Code of Pakistan (Seismic Provisions-2007) shall apply for engineering design of buildings, like structures and related components.
- Construction of buildings in violation of the Building Code shall be considered as violation of professional engineering work as specified under clause (XXV) of section 2 of the Act.

The project will comply with the seismic provision during building design. Moreover, a certificate for the proposed action will be obtained from Provincial Building Control Authority.

### 3.2.11. Land Acquisition Act 1894

The Land Acquisition Act, 1894, is a "law for the acquisition of land needed for public purposes and for companies and for determining the amount of compensation to be paid on account of such acquisition". The exercise of the power of acquisition has been limited to public purposes. This law will be applicable if land acquisition is needed as a result of any sub-component and will ensure provision of adequate compensation of land to the affectees. Presently, the requisite land for the proposed project is already owned by the project proponent, so that no additional private or government land will need to be acquired for the project.

The LAA regulates the land acquisition process and enables the provincial governments to acquire private land for public purposes. The LAA does not take into account the rehabilitation and settlement of displaced population and restoration of their livelihoods. Land acquisition is a provincial responsibility and provinces have also their own province specific implementation rules. The LAA and its Implementation Rules require that, following an impact identification and valuation exercise, land and crops are compensated in cash at the current market rate to titled landowners. The LAA mandates that land valuation is to be based on the last 3 to 5 years average registered land-sale rates. However, in several recent cases, the median rate over the past 1 year, or even the current rates, have been applied with an added 15% Compulsory Acquisition Surcharge according to the provision of the law. The project affected persons (PAPs), if not satisfied, can go to the Court of Law to contest the compensation award of the Land Acquisition Collector (LAC).

## 3.3. World Bank Safeguard Policies

The objective of the World Bank's environmental and social safeguard policies is to prevent and mitigate undue harm to people and their environment in the development process. These policies provide guidelines for the bank and borrowers in the identification, preparation, and implementation of programs and projects. Safeguard policies have often provided a platform for the participation of stakeholders in project design, and have been an important instrument for building ownership among local populations.

**Table 3.2: Safeguard Policies Applicability**

| Subject | Policy Reference | Triggered | Remarks |
|---|---|---|---|
| Environmental Assessment | OP/BP 4.01 | Yes | The project is categorized as Category B for its envisaged impacts. ESMF is prepared accordingly. |
| Natural Habitats | OP/BP 4.04 | Yes | This OP is triggered as sub-projects under Component 2 will likely to be carried out within or near natural forests. ESMF includes screening procedure which will exclude the activities which are not allowed under the policy and inform the further impact assessment and mitigation measures required for each sub-project. |
| Pest Management | OP 4.09 | No | This OP is not relevant since the proposed project does not use pesticides. There is a potential disease infection of tree saplings (which is very rare for forest tree saplings). In that case, part or entire infected saplings will be |

| Subject | Policy Reference | Triggered | Remarks |
|---|---|---|---|
| | | | mechanically removed and any pesticide will not be used for disease treatment. |
| Forestry | OP 4.36 | Yes | This OP is triggered since the sub-projects under Component 2 involve afforestation and reforestation activities, mostly on degraded land. |
| Safety of Dams | OP 4.37 | No | This OP is not relevant. |
| Physical and Cultural Resources | OP/BP 4.11 | No | This OP is not triggered as physical or cultural heritage sites will be excluded from the project area. However, a chance find procedure is included in ESMF. |
| Involuntary Resettlement | OP/BP 4.12 | Yes | Potential for land acquisition and / or involuntary resettlement is minimal under this project. However, this OP is triggered as project sites for PMD and Automatic Weather Stations may require small scale removal of encroachments or acquisition of land to a limited extent. In case of community forestation, the respective forest departments may need to remove encroachers and / or squatters from their departmental lands. An RPF has been prepared for the project as given in Chapter 8 of this ESMF. In such cases, sub-project specific RAPs or abbreviated RAPs will be prepared. |
| Indigenous Peoples | OP 4.10 | Yes | This policy is triggered as the project may involve areas where Kalash people exist. A separate IPPF has been prepared to assess the potential impacts and to propose necessary mitigation measures. For any intervention in the area of indigenous community, IPPPs will be prepared according to this policy |
| Disputed Areas | OP 7.60 | No | Project does not fall in disputed areas |
| International Waterways | OP 7.50 | No | Project does not fall in cross boundary waters |
| Bank Disclosure Policy | BP 17.50 | Yes | Under the policy, the Bank would provide access to information about projects under preparation, projects under implementation, analytic and advisory activities and Board proceedings |

### 3.3.1. OP /BP4.01 Environmental Assessment

The World Bank requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making. The OP defines the EA process and various types of the EA instruments. Component 1 deals with the improvement and construction of office facilities and radar installation, which may potentially cause negative environmental and social impacts. Most of these impacts are likely to be small scale, localized, and reversible in nature. Component 2 involve ecosystem restoration activities which are intended to produce positive environmental impacts. Most of these impacts are likely to be small scale, localized, and reversible in nature. This project is classified as "Category B" with partial assessment per the WB safeguards category. Since the exact nature and locations of the proposed sub-projects are not identified, therefore an ESMF has been prepared in accordance with OP 4.01

Since the physical activities under the project would be small-scale interventions such as refurbishment of PMD building, installation of AWS etc., the level of environmental and social impacts is likely to be low to moderate. This ESMF presents checklists designed to identify these potential impacts, and direct project teams to practical ways of avoiding or mitigating them. If project screening used by Implementing Partners finds that more detailed planning work is required, Environmental and Social Management Plans (ESMPs) will be prepared for activities where warranted.

### 3.3.2. OP /BP4.04 Natural Habitat

The Policy highlights the importance of conservation of natural habitats, like other measures that protect and enhance the environment, for long-term sustainable development. The Bank therefore supports the protection, maintenance, and rehabilitation of natural habitats and their functions in its economic and sector work, project financing, and policy dialogue. The Bank also supports, and expects borrowers to apply a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. The Bank-promotes and supports natural habitat conservation and improved land use by financing projects designed to integrate into national and regional development the conservation of natural habitats and the maintenance of ecological functions. Furthermore, the Bank promotes the rehabilitation of degraded natural habitats. The Bank does not support activities that involve the significant conversion or degradation of critical natural habitats.

There is the chance that beneficiaries may want to conduct project supported livelihood activities within or near sensitive habitats under sub-component 2-1 and 2-2

This OP is **triggered** as sub-projects under Component 2 will likely to be carried out within or near ecologically sensitive habitats including protected areas. The ESMF includes screening procedure which will exclude the activities which are not allowed under the policy and inform the further impact assessment and mitigation measures required for each sub-project to be supported.

### 3.3.3. WB OP 4.36 Forestry

The objective of this policy is to assist borrowers to harness the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests. Where forest restoration and plantation development are necessary to meet these objectives, the Bank assists borrowers with forest restoration activities that maintain or enhance biodiversity and ecosystem functionality. The Bank also assists borrowers with the establishment and sustainable management of environmentally appropriate, socially beneficial, and economically viable forest plantations to help meet growing demands for forest goods and services.

This OP is triggered since the sub-projects under Component 2 might be located near or inside the designated forest.

### 3.3.4. WB OP 4.12 (Involuntary Resettlement)

The overall objectives of the Policy include:

1. Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs;
2. Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs; and
3. Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

Major resettlement is not anticipated within the Project, however encroachments on public lands are a possibility. The OP has been triggered to guide any land acquisition within the project, as well as to assist in removal of encroachments using entitlements and eligibility.

Furthermore, under component 2 of the project, there might be interventions that may cause restrictions in access to legally designated parks and protected areas, or, to natural habitats/natural resources in areas which are not legally protected areas. In such cases, the nature of restrictions, as well as the type of measures necessary to mitigate adverse impacts, will be determined with the participation of the displaced persons during the design and implementation of the sub-project, and the implementation partner will prepare a process framework, describing the participatory process for preparation and implementation of the sub-project components; determining the eligibility criteria for displaced persons; identification of measures to assist the displaced persons in their efforts to improve their livelihoods, or at least to restore them; and grievance and conflict resolution mechanism. IN cases where the areas are not legally protected, ARAP/RAP will be prepared to mitigate impacts on economic displacement and livelihoods. However, the probability of such a situation occurring is low, though the exact nature and location of the activities under component 2 are yet to be finalized.

### 3.3.5. OP /BP4.10 Indigenous People

This policy contributes to the Bank's mission of poverty reduction and sustainable development by ensuring that the development process fully respects the dignity, human rights, economies, and cultures of Indigenous Peoples. The Bank provides project financing only where free, prior, and informed consultation results in broad community support to the project by the affected Indigenous Peoples. Such Bank-financed projects include measures to (a) avoid potentially adverse effects on the Indigenous Peoples' communities; or (b) when avoidance is not feasible, minimize, mitigate, or compensate for such effects. Bank-financed projects are also designed to ensure that the Indigenous Peoples receive social and economic benefits that are culturally appropriate and gender and intergenerationally inclusive.

Kalash community of Chitral is a recognized Indigenous People. Since some project activities under component 2 might be located close to Kalash dwellings, this OP has been triggered. A separate IPPF has been prepared for the project under this policy.

### 3.3.6. BP 17.50 World Bank Disclosure Policy

The WB Disclosure Policy will be applicable for this project. Under the policy, the Bank would provide access to information about projects under preparation, projects under implementation, analytic and advisory activities and Board proceedings.

## 3.4. Environmental Codes of Practice

Environmental Codes of Practices (ECoPs) are to address less significant environmental impacts and all general construction related impacts of the proposed project implementation. The ECoPs provide guidelines for best operating practices and environmental management guidelines to be included in ESMPs and to be followed by the contractors for sustainable management of all environmental issues. The list of ECoPs is provided below. Detailed ECoPs can be found in **Annexure 2**.

- ECP 1: Waste Management
- ECP 2: Fuels and Hazardous Substances Management
- ECP 5: Soil Quality Management
- ECP 6: Erosion and Sediment Control
- ECP 7: Borrow Areas Development & Operation
- ECP 8: Air Quality Management
- ECP 9: Noise and Vibration Management
- ECP 10: Protection of Flora
- ECP 11: Protection of Fauna
- ECP 12: Protection of Fisheries
- ECP 14: Construction Camp Management
- ECP 15: Cultural and Religious Issues
- ECP 16: Workers Health and Safety

## 3.5. Other World Bank Guidelines & Policies

### 3.5.1. WB Committee on Disability-Inclusive Development

The World Bank has accelerated its support for disability-inclusive development with significant strides in operations and analytical work. This has culminated in World Bank's first Disability Inclusion and Accountability Framework, which offers a roadmap for:

- Including disability in the World Bank's policies, operations, and analytical work; and
- Building internal capacity for supporting clients in implementing disability-inclusive development programs.

The Framework is also relevant to policymakers, government officials, other development organizations, and persons with disabilities.

### 3.5.2. Labor Influx

These guidelines provide guidance on identifying, assessing and managing the risks of adverse social and environmental impacts that are associated with the temporary influx of labor resulting from Bank supported projects. It contains guiding principles and recommendations to be considered as part of the design and implementation of projects with civil works that require labor from outside the project's area of influence. It seeks to provide concrete guidance on how to approach temporary labor influx within the environmental and social assessment process.

### 3.5.3. WB EHS Guidelines

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). When one or more members of the World Bank Group are involved in a project, these EHS Guidelines are applied as required by their respective policies and standards. These General EHS Guidelines are designed to be used together with the relevant Industry Sector EHS Guidelines which provide guidance to users on EHS issues in specific industry sectors. For complex projects, use of multiple industry-sector guidelines may be necessary.

### 3.5.4. World Bank Group Gender Strategy (2016-2023)

The 2015 Gender Strategy recognizes that stronger and better-resourced efforts are needed to address gender inequalities in access to jobs as well as control over and ownership of productive assets are key levers of change for women, their communities and economies and fundamental drivers of economic growth and poverty reduction. Gender equality is central to the World Bank Group's own goals of ending extreme poverty and boosting shared prosperity in sustainable manner.

## 3.6. International Conventions / Agreements

The following international conventions to which Pakistan is a signatory are relevant to project interventions:

**Table 3.3: International Conventions**

| Category | Convention/convention | Came into force |
|---|---|---|
| Chemicals and hazardous wastes conventions | Stockholm Convention on Persistent Organic Pollutants | April 2008 |
| | Rotterdam Convention on the Prior Informed Consent procedures for Certain Hazardous Chemicals and Pesticides in International Trade. | July 2005 |
| | Basel Convention on the control of Trans-boundary Movement of Hazardous Wastes and their Disposal. | July 1994 |
| Atmosphere conventions/protocols | United Nations Framework Convention on Climate Change (UNFCCC) | June 1994 |
| | Kyoto Protocol to UNFCCC | Jan 2005 |
| | Vienna Convention for the protection of the Ozone Layer. | Dec1992 |
| | Montreal Protocol on Substances that Deplete the Ozone | Dec 1992 |

| Category | Convention/convention | Came into force |
|---|---|---|
| | Layer. | |
| Land / environmental cooperation conventions | United Nations Convention to Combat Desertification (UNCCD) in those Countries Experiencing Serious Drought and / or Desertification, Particularly in Africa. | Feb 1997 |
| Cultural and natural heritage | Convention Concerning the Protection of World Cultural and Natural Heritage (World Heritage Convention) | July 1976 |
| Biodiversity related conventions/protocols | Convention on Biological Diversity (CBD). | July 1994 |
| | Cartagena Protocol on Bio-safety to the Convention on Biological Diversity. | March 2009 |
| | Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) | Nov 1976 |
| | Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). | April 1976 |
| | Convention on the Conservation of Migratory Species of Wild Animals (CMS) | Dec 1987 |

## 3.7. Gap Analysis of Land Acquisition Act & World Bank Policies

The Land Acquisition Act (LAA 1894), while dealing with acquisition of private lands for public purposes, does not deal with the resettlement and restoration of livelihood etc. The key principles of the World Bank Involuntary Resettlement Policy include the need to improve, or at least restore, livelihood levels to what they were before. Besides, the policy also requires prompt compensation and timely disclosure of relevant information.

It is to be noted that the likelihood of land acquisition and involuntary resettlement due to the proposed project is minimal. However, LAA 1894 and OP 4.12 comparison, in terms of differences and gaps, is given in Table 3.5 below. The objective of this exercise is to ensure that both the instruments are taken into consideration and relevant mitigation measures are identified in the project specific ESMPs if and when the need arises of land acquisition and / or involuntary resettlement:

**Table 3.4: WB OP 4.12 Involuntary Resettlement & Pakistan Land Acquisition Act**

| World Bank Involuntary Resettlement Policy Principles | Pakistan's Land Acquisition Act | Approaches to Address the GAPs |
|---|---|---|
| Screen the project early on to identify past, present, and future involuntary resettlement impacts and risks. Determine the scope of resettlement planning through a survey and/or census of displaced persons, including a gender analysis, specifically related to resettlement impacts and risks. | No equivalent requirements | Individual sub-project to be screened and categorized. Scope defined, social assessment and gender analysis to be undertaken. |
| Carry out meaningful consultations with affected persons, host communities, and concerned NGOs. Inform all displaced persons of their | LAC or District Judge (in case of the Telegraph act) | Project level GRM proposed in ESMF. Specific GRM |

| World Bank Involuntary Resettlement Policy Principles | Pakistan's Land Acquisition Act | Approaches to Address the GAPs |
|---|---|---|
| entitlements and resettlement options. Ensure their participation in planning, implementation, and monitoring and evaluation of settlement programs. Pay particular attention to the needs of vulnerable groups, especially those below the poverty line, the landless, the elderly, women and children, and Indigenous peoples, and those without legal title to land, and ensure their participation in consultations. Establish a grievance redress mechanism to receive and facilitate resolution of the affected persons' concerns. Support the social and cultural institutions of displaced persons and their host population. Where involuntary resettlement impacts and risks are highly complex and sensitive, compensation and resettlement decisions should be preceded by a social preparation phase. | are the final authorities to decide disputes and address complaints regarding quantification and assessment of compensation for the affected lands and other assets | mechanism to be put in place for individual sub-projects. Consultations conducted, and remain an on-going process. Vulnerable groups identified. |
| Improve, or at least restore, the livelihoods of all displaced persons through (i) land-based resettlement strategies when affected livelihoods are land based where possible or cash compensation at replacement value for land when the loss of land does not undermine livelihoods,(ii) prompt replacement of assets with access to assets of equal or higher value, (iii) prompt compensation at full replacement cost for assets that cannot be restored, and (iv) additional revenues and services through benefit sharing schemes where possible. | No equivalent requirements. | Livelihoods restoration is required and allowances are provided. |
| Provide physically and economically displaced persons with needed support | No equivalent requirements. | Support provided to be commensurate with impacts |

## 3.8. NDRMF Guidelines

NDRMF is an environmentally and socially responsible organization and has established a structured and systematic mechanism i.e. Environmental Social Management Systems (ESMS), to address environmental and social issues as a core function, and ensure that the Fund's financing activities would avoid, minimize and/or manage adverse environment and social impacts and enhance any positive impacts.

The Fund's environment and social policy and principles adhere to the requirements of national legal and regulatory regime, and international ratified conventions and agreements. In addition to this, the Fund shall also comply with environment and social policies of the respective Financing Source(s) including the World Bank. NDRMF has established and operationalized a Grievance Redress Mechanism (GRM) for all stakeholders including implementing partners, individuals and/or communities to voice their concerns, complaints and grievances verbally or in writing through any communication means. Grievance Redress Committee (GRC) at Funds level is established and provides maximum satisfaction to the complainants through highly transparent process with support of a legal advisor.

Safeguards' (Environment, Social & Gender) performance of each sub-project is evaluated on a semi-annual basis. NDRMF ensures that all the partners prepare and submit the mandatory

monitoring reports on regular basis. The M&E system developed within the NDRMF also includes information on the safeguards compliance status and activities. In addition, the Fund engages third party (firm) on annual basis for independent detailed assessment study on safeguards compliance.

Moreover, meaningful gender inclusive stakeholder consultation is considered as important notation in NDRMF and carried out at various stages of sub-projects. Stakeholder consultation can possibly enhance the quality of environment and social assessments and acceptability during decisions making.

# Chapter 4. Assessment of Environmental and Social Baseline

The chapter describes the baseline information related to the physical, biological and socio-economic environment of the project area of the proposed development.

## 4.1. Project Area

The project area in the document refers to the area where project interventions and components will be executed. The project area for Pakistan Hydro-Meteorological and Ecosystem Restoration includes districts of Punjab, Sindh, Baluchistan and KPK province and Islamabad Capital Territory. As project activities will be across Pakistan, national level environmental and social baselines have been provided in this ESMF. Detailed site specific baselines will be included in Environmental & Social Management Plans (ESMPs) developed for each sub-project.

## 4.2. Physical Environment

The physical environment includes the abiotic component of the environment on which biological life is dependent to survive. The physical environment of the project area is explained below:

### 4.2.1. Climate

Pakistan's topographical features range from high mountains in the north to the coastal plains in the south. Climatic divisions of Pakistan is given in Table 4.1:

**Table 4.1: Climate Zones in Pakistan**

| Title | Type | Prevalence |
|---|---|---|
| Zone A | highland climate | northern, north-western and western mountains |
| Zone B | lowland climate | Whole of the Indus Plain |
| Zone C | Coastal climate | Makran Coast, Karachi Coast and Indus Delta till the Rann of Kutch |
| Zone D | Arid climate | South-eastern desert and south-western parts of Baluchistan |

### 4.2.2. Topography

Pakistan can be divided into three major Physiographic units:

1. Northern mountains
2. Western highlands
3. Indus plain.

In addition to these three, a relatively small physiographic division comprises Potohar plateau and Salt Range in the Punjab occupying the north-western section of the Indus plain. The vast drainage area of the Indus corresponds roughly to the provinces of Punjab and Sindh. The plain in Punjab varies from about 150 to 300 meters and consists of fine alluvium deposited by the Indus, and its tributaries. At lower altitude towards south in Sindh, the plain differs in

characteristics and is formed by the deposit of only one river, i.e. the Indus and the alluvium here is of more recent character. The Indus plain is bounded on the west by highlands which are lower than northern mountain in altitude and are also comparatively more arid. The aridity increases in these highlands from KPK Province in the north to the Baluchistan province in the south.

### 4.2.3. Surface Water Hydrology

Pakistan can be divided into three main units in terms of hydrology: Indus Basin; closed basin of Kharan desert; and, the Makran coastal basin. The Indus basin covering some 360,000 sq. miles is the largest. Besides its five main tributaries including Jhelum, Chenab, Ravi and Sutlej in the Punjab, the Indus River is also drained by Kabul and its main tributaries from Swat, Chitral and Panjkora as well as Kurrum and Gomal rivers of KPK. The rivers of the closed basin such as Mashkel and Zangi Nawar disappear into lakes such as Hamuni- Mashkel and Haimun-i-Lora. The Makran Coast rivers including Hingol, Purali and Dasht drain into the Arabian Sea east of Indus River.

### 4.2.4. Natural Hazard Vulnerability

***Earthquake***

National Seismic Monitoring Centre of Pakistan at the PMD issued the seismic zone map for Pakistan, as shown in **Figure 4.1**. The geotectonic movement of the whole region is related to the collision of the Indian tectonic plate with Eurasian plate and subsequent formation process of the Himalayan Ranges. This tectonic process is the origin of the seismicity along the Himalayas and in particular where northern Pakistan and Kashmir are located.

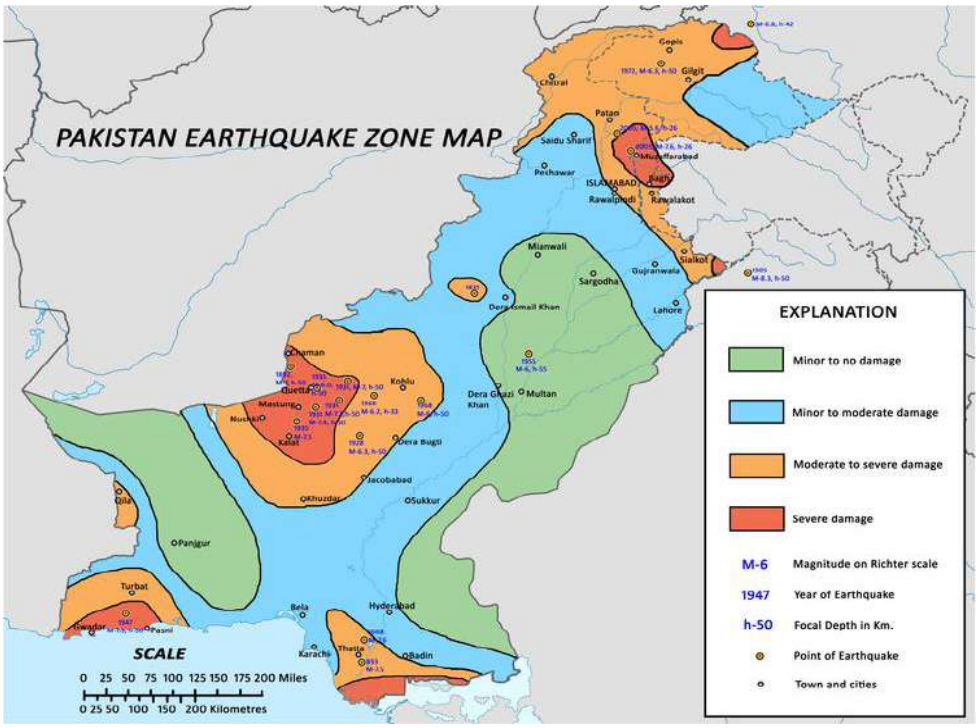



**Figure 4.1: Seismic Zones of Pakistan[22]**

[22] National Seismic Monitoring Center, Pakistan Meteorological Department (PMD)

***Floods***

The project locations for Automatic Weather Stations in various parts of Pakistan will be prone to floods. Floods of 2010 began in late July 2010, resulting from heavy monsoon rains and affected the Indus River basin. Approximately one-fifth of Pakistan's total land area was underwater; the floods directly affected about 20 million people, mostly by destruction of property, livelihood and infrastructure, with a death toll of close to 2,000. Again in 2015 starting from late July, heavy rains continued to fall in northern and eastern Pakistan causing floods. District Chitral in KPK was badly impacted. Over 800,000 people across 2,200 villages in the five affected provinces were displaced.[23] **Figure 4.2** is a map indicating the areas of the project most likely to be impacted in case of flood based on the 2010 flooding pattern**.**

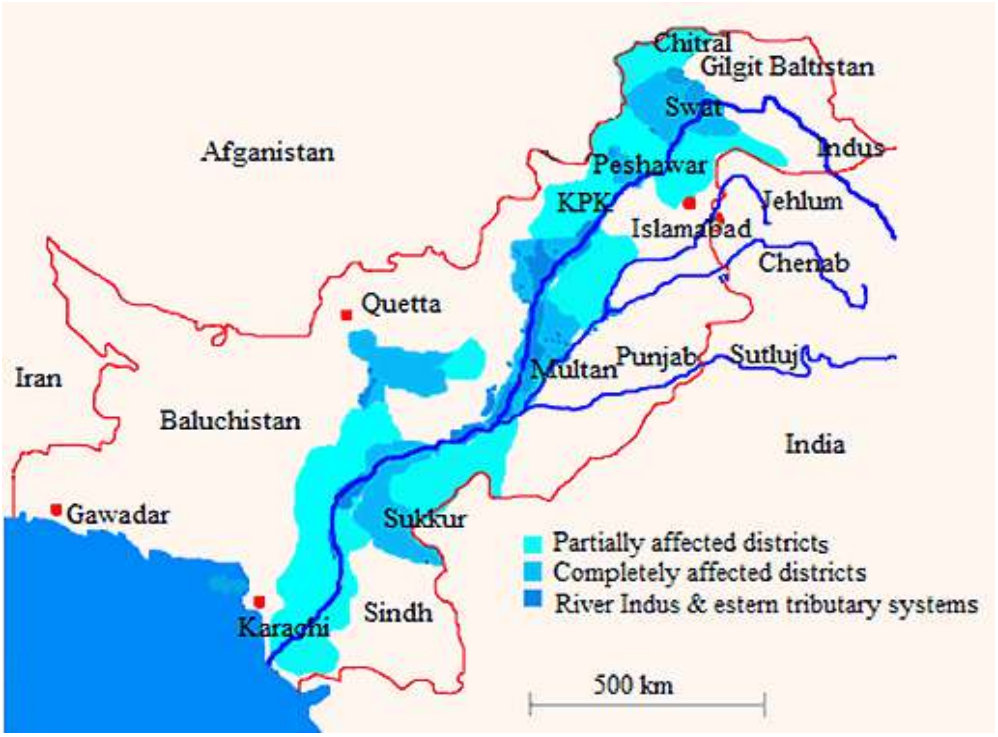



**Figure 4.2: Impacted Area of Floods 2010[24]**

### 4.2.5. Ground Water

Groundwater availability is limited in Pakistan and poses a severe problem for water supply. Worst affected are the most arid regions of Baluchistan and the southeast of Pakistan. Prior to the development of irrigation systems, groundwater tables in the Indus Plain were typically 20-30m below surface, which have now gone down to 30-300m in major cities. The problem is exacerbated by over abstraction of ground water. A recent study to investigate groundwater quality and monitoring strategy has indicated a distinct paucity of chemical data.[25] From the limited data available, it appears that the most recognised water quality problem is poor

[23] NDMA Annual Report 2010-www.ndma.gov.pk
[24] National Disaster Management Authority (NDMA)
[25] Chilton, P.J., Jamieson, D., Abid, M.S., Milne, CJ., Ince, M.E. and Aziz, J.A. 2001. Pakistan water quality mapping and management project. Scoping study. LSHTM/WEDC Report to DFID.

microbial quality within distribution systems which can lead to severe health problems.[26] High salinity has led to restrictions in resource availability. Excessive fluoride is an additional common problem. Recent well testing of sources within the Indus Plain has also identified some ground waters with unacceptably high concentrations of arsenic, however, the numbers of affected wells recognised is low.

#### 4.2.6. Air Quality and Noise

Air pollution is considered to be a primarily urban problem in Pakistan as the rate of urbanization increases. In rural areas, air quality is considered to have been negatively affected in areas adjacent to industrial estates or isolated industrial plants set up outside city limits. In recent times, smog has become a prime concern during winter months, particularly in Lahore and other cities of central Punjab. Sufficient data of Air Quality Monitoring at a national level is not available for the country, as such work has been done in isolation.[27]

### 4.3. Ecological Environment

#### 4.3.1. Biodiversity

Pakistan has a rich biodiversity due to diverse physiography, soil types, and climate. Terrestrial biomes of Pakistan range from deserts in the south to the mountain ranges of the Himalayas, Karakorum, and Hindu Kush in the north and west. Of the total national land area, 62.7% constitutes wilderness, regions that are neither suitable for agriculture or for commercial forestry[28]. Majority of these areas comprising of deserts, arid lands and mountains are either communally owned or state lands. Approximately 5.9 million ha of these lands are designated as rangelands.[29] Pakistan can be divided into eleven ecological zones and nine main agro-ecological zones according to distribution of flora and fauna.

Up to 174 mammal species have been reported in Pakistan. A high percentage of Pakistan's birds are migratory; over 30% of recorded species are Palaeartic winter visitors. The Sulaiman Range, the Hindu-Kush and the Himalayas in KPK and the erstwhile FATA comprise part of the Western Himalayan Endemic Bird Area.[30] As Pakistan is predominantly an arid and semi-arid country, only 22 species of amphibians have been recorded. A number of marine turtle species nest on Pakistan's beaches. Out of 29 endemic fish species, nine are snow trout occurring in northern snow fed rivers. Eighty species of butterflies have been recorded in the northern mountains, many of which are endemic. Almost 80% of Pakistan's endemic flowering plants are confined to the northern and western mountains.[31]

[26] Hina, S. 2000. Bacterial contamination major cause of groundwater pollution. http//lists.isb.sdnpk.org/pipermail/eco-list/2000/2000-September/000355.html.
[27] State of the Environment Report, 2005; Pakistan Environmental Protection Agency
[28] National Biodiversity Strategy and Action Plan 2015, Government of Pakistan
[29] Government of Pakistan, 2005. Forests & Biodiversity Information/Data Report. Ministry of Environment, Government of Pakistan, Islamabad.60 pp + 5 appendices
[30] Biodiversity of Pakistan, TJ Roberts,1997
[31] Biodiversity in Pakistan: Key issues, 2011 https://www.researchgate.net/publication/239936897_Biodiversity_in_Pakistan_Key_issues

### 4.3.2. Flora

More than 6,000 flowering species have been recorded in Flora of Pakistan. Though there is no detailed data available it is estimated that there are 465 endemic species in Pakistan, of which 50 species are on the verge of extinction.[32] Five monotypic genera (*Douepia, Sulaimania, Kurramiana, Wendelboa, and Spiroseris*), and 400 plant species belonging to 169 genera and 45 families are restricted to the northern and western mountains.[33] The flora of Pakistan includes eight species of mangroves, with *Avicennia Marina* being the predominant species.

Of the nearly 5,600 species of vascular plants recorded in Pakistan, around 400 species — 7.1% of the total flora — are endemic. Centers of endemism are in the northern and western mountains at altitudes above 1,200 m where 90% of the endemics are found. Deforestation and overgrazing are threatening the flora of Pakistan and the tree *Ulmus wallichiana* is listed as an endangered species. There are an estimated 2,000 medicinal plants that could play an important role in the country's economy.[34]

### 4.3.3. Fauna

The main wildlife species found in the northern mountainous regions of the Himalayan, Karakorum and Hindukush Ranges are the snow leopard (*Panthera uncia*), the black and the brown bears, otter (*Lutrinae),* wolf (*Canis lupus),* himalayan ibex (*Capra ibex sibirica),* markhor (*Capra falconeri*), bharal (*Pseudois nayaur),* Marco Polo sheep (*Ovis ammon polii*), shapu (*Ovis orientalis vignei*), musk deer (*Moschus),* marmots (*marmot),* western tragopans (*Tragopan melanocephalu)* and monal pheasants (*Lophophorus impejanus*). At lower elevations there is a presence of the Rhesus monkey (*Macaca mulatta*), common langur (*Semnopithecus),* red fox, black bear, common leopard, a variety of cats, musk deer, goral (*Naemorhedus),* several species of flying squirrels, chakor partridge (*Alectoris chukar*) and pheasants (koklass, kaleej and cheer). The Himalayan foothills and the Potohar region, including the Salt Range and Kala Chitta Range, are home to medium-sized animals such as the Punjab urial (*Ovis orientalis),* barking deer, goral, chinkara (*Gazella bennettii),* partridges (grey and black) and chakor. A variety of songbird fauna also occurs in these areas.

Towards south, vast areas of the Indus flood plains have been cleared of natural vegetation for agriculture. These areas are home to the jackal, mongoose, jungle cat, civet cat, scaly anteater, desert cat and the wild hare, as well as the Hog deer in riverine tracts and black and grey partridges. The desert areas of Cholistan and Thar are home to the chinkara, grey partridge, species of sand grouse and the Indian courser and pea fowl.

There are six endemic mammal species in Pakistan. Among them two — the little known woolly flying squirrel (*Eupetaurus cinereus*), found in the northern mountain areas, and the Indus dolphin — are endangered. Other threatened species include the Baluchistan black bear, (*Ursus thibetanus gedrosianus*), the snow leopard and four ungulates: markhor (*Capra*

[32] Flora of Pakistan; Missouri Botanical Garden and Karachi University

[33] Ali, S. I. 2008. 2008. Significance of Flora with Special Reference To Pakistan. Pak. J. Bot., 40(3): 967-971,

[34] Biological Diversity in Pakistan, IUCN, 1997

*falconeri*), Marco Polo sheep (*Ovis ammon polii*), goitred gazelle (*Gazella subgutturosa*), and urial (*Ovis orientalis*).[35]

Over 177 species of reptiles are known in Pakistan; Chelonia - 14, Crocodilia - 1, Sauria - 90, and Serpentes - 65. Of these, 18 are endemic: 13 lizards and 5 snakes.

Pakistan has 668 bird species of which one third are waterbirds. Majority of these are migratory species, including geese, ducks, swans, waders, and other waterbirds. Species that require urgent conservation attention include the Siberian Crane (*Grus leucogeranus*), the Sarus Crane (*Grus Antigone*), the Dalmatian Pelican (*Pelicanuscrispus*), the Sociable Plover (*Vanellusgregarious*), the Lesser White-fronted Goose (Ansererythropus), Pallas's Fish Eagle (*Heliaeetusleucoryphus)*, and vultures.[27] Pakistan does not have a fully endemic bird species. Two species of pheasants, the western tragopan (*Tragopan melanocephalus*), and the cheer pheasant (*Catreus wallichii*), together with the great Indian bustard (*Ardeostis nigriceps*) are listed as endangered. Two significant populations of the western tragopan are found in the Pallas Valley of Kohistan and the Neelum Valley. Pakistan is the second most important wintering ground for the white-headed duck (*Oxyura leucocephala*).

The most distinctive *heptrofauna* is found in the Chaghai desert where 6 endemic species occur. Four species are listed as endangered; the green turtle (*Chelonia mydas*), the olive ridley turtle, (*Lepidochelys olivacea*), the gharial (*Gavialis gangeticus*), and the Central Asian cobra (*Naja oxiana*). [36]

The National Biodiversity Strategy & Action Plan of 2015 identifies 198 species of freshwater fish fauna in Pakistan. The fish fauna is predominantly south Asian, with some west Asian and high Asian elements. The fish fauna of the northern areas of Pakistan comprises 20 restricted species. About 140 species of fish fauna, especially warm water fish, is restricted to the Indus plain. Of these, the genus *Schistura* is restricted to sub-mountain areas while the genus *Triplophysaisis* mainly confined to high altitude regions. Snow trout are found in the Himalayas, Hindukush, and Karakoram mountain ranges and are not represented in the Indus plain. The coastal areas of Pakistan are nesting grounds of the green turtle (*Cheloniamydas*) and the olive ridley turtle (*Lepidochelysolivacea*).

The number of endemic species and those considered as threatened with extinction is presented in **Table 4.2**. The IUCN Red List of threatened species lists 45 species of internationally threatened animals occurring in Pakistan. Of these, 4 are critically endangered, twelve are endangered and twenty nine vulnerable. Out of these 45 species, 18 are mammals, 17 birds 9 reptiles, and one fish. Among the endangered mammals are snow leopards, flare horned markhors, marco polo sheep, ladakh urial, musk deer, brown bear, and woolly flying squirrel. The project interventions are not likely to be carried out in habitats of endangered species of plants and animals according to IUCN Red List[37].

[35] National Biodiversity Strategy and Action Plan 2015, Government of Pakistan
[36] Biological Diversity in Pakistan, IUCN, 1997
[37] http://www.iucnredlist.org

**Table 4.2: Endemic and Threatened Species in Pakistan[38]**

| Species/Group | Total number reported | Endemic | Threatened |
|---|---|---|---|
| Mammals | 174 | 6 | 20 |
| Birds | 668 | N/a | 25 |
| Reptiles | 177 | 13 | 6 |
| Amphibians | 22 | 9 | 1 |
| Fish (freshwater) | 198 | 29 | 1 |
| Fish (marine) | 788 | - | 5 |
| Echinoderms | 25 | - | 2 |
| Molluscs (marine) | 769 | - | 8 |
| Crustaceans (marine) | 287 | - | 6 |
| Annelids (Marine) | 101 | - | 1 |
| Insects | >5000 | - | |
| Angiosperms | 5700 | 380 | N/a |
| Gymnosperms | 21 | - | N/a |
| Pteridophytes | 189 | - | N/a |
| Algae | 775 | 20 | N/a |
| Fungi | >4500 | 2 | N/a |

### 4.3.4. Forests

The Land Use Atlas of Pakistan puts the official estimates of forest cover in Pakistan at 5.1%[39] making it 4.47 million ha of total forest area in the country (5.1 percent of the total land area). [40]Distribution of forests varies by province and other administrative area. In absolute terms (that is, the percentage of forest area to total forests in the country), KP is the richest (32.7 percent), followed by Sindh (14.8 percent) and Punjab (12.4 percent). In relative terms (that is, the percentage of forest area to total area of the respective province or administrative area), however, the top three provinces or other administrative areas are AJK (35.1 percent), KP (19.6 percent), and former FATA (19.2 percent).

There are two main types of forests—natural forests (conifers, scrub, riverine, and mangrove forests) and plantations (farmland plantations, roadside plantations and canal-side plantations). The majority, about 4.28 million ha (4.8 % of the total land area), is natural forest. Irrigated plantations have been raised mainly in Punjab and Sindh. The plantations make up 4.4 % of total forest area and 0.3 % of the total area of the country.

[38] Biodiversity in Pakistan: Key issues, 2011

[39] Government of Pakistan, 2009. Land use Atlas of Pakistan.

[40] Bukhari, S. B., T. Laeeq, and H. Ali. 2012. "Land Cover Atlas of Pakistan." Pakistan Forest Institute.

**Table 4.3 Distribution of Forests in Various Provinces and Other Administrative Areas**

| Provinces and other Administrative Areas | Total Area (ha) | Natural Forests (ha) | Plantations (ha) | Total Forests (ha) | Forests to Total Area % | Forests to Total Forests % | Natural Forests to Total Area % | Plantations to Total Forests % |
|---|---|---|---|---|---|---|---|---|
| **Punjab** | 20,540,449 | 464,561 | 89,309 | 553,862 | 2.7 | 12.4 | 2.3 | 16.1 |
| **Sindh** | 14,263,918 | 589,398 | 71,186 | 660,584 | 4.6 | 14.8 | 4.1 | 10.8 |
| **KP** | 7,448,636 | 1,459,872 | 4,190 | 1,464,062 | 19.7 | 32.7 | 19.6 | 0.3 |
| **Balochistan** | 35,194,796 | 498,906 | 0 | 498,906 | 1.4 | 11.1 | 1.4 | 0.0 |
| **Former FATA** | 2,733,268 | 524,040 | 10,539 | 534,579 | 19.6 | 11.9 | 19.2 | 2.0 |
| **GB** | 6,981,387 | 313,812 | 0 | 313,812 | 4.5 | 7.0 | 4.5 | 0.0 |
| **AJK** | 1,178,038 | 413,025 | 18,747 | 431,772 | 36.7 | 9.6 | 35.1 | 4.3 |
| **Total** | **88,430,442** | **4,281,322** | **196,598** | **4,477,920** | **5.1** | **100.0** | **4.8** | **4.4** |

According to FAO (2010)[41], Pakistan had 1.68 million ha of forests in 2010, down from 2.5 million ha in 1990. Including other wooded land, the forest area in 2010 became 3.1 million ha, still much lower than the figures reported by national sources. Forest resources continue to deteriorate both qualitatively and quantitatively because of increasing pressure from a rising population and associated needs. Significant areas of forest lands have been transferred to commercial purposes, including agriculture, infrastructure, defense, and tourism (FAO 2009). The coniferous forests are the most fragile and are rapidly declining because of their high-value timber. Because of overexploitation, deforestation in natural forests is taking place at the rate of 0.75 percent, or 27,000 ha per year (FAO 2009). The GoP identifies three categories of direct drivers of deforestation which, in order of decreasing severity, are demand and consumption of forest products, land use change, and natural or manmade hazards.

The forests of Pakistan are grouped into five physiognomic classes, conifers (40%), scrub (28%), riverine (7%), mangroves (8%), and plantations (11%).[42] Natural forests comprise a number of diverse ecosystems, including the Western Himalayan Temperate Forests, one of the global 200 priority ecosystems. In addition, Baluchistan boasts the world's second largest compact forest of Juniper, considered a living fossil.[43] While all forest ecosystems in Pakistan are threatened, edible pine nut (*Pinus gerardiana*) forests, found primarily in community-controlled areas, are under serious threat of disappearance due to logging by local communities as a means of livelihoods.[44] **Figure 4.3** presents a Forest Cover map of Pakistan.

[41] FAO (Food and Agriculture Organization). 2009. "Pakistan Forestry Outlook Study." Working Paper No. APFSOS II/WP/2009/28, Office of the Inspector General of Forests, Ministry of Environment. Asia Pacific Forestry Sector Outlook Study II.
[42] Forestry Sector Master Plan (FSMP) Estimates of Land Use Based on Satellite Imagery Interpretation database
[43] UNESCO 2013; Man and Biosphere Reserve
[44] National Biodiversity Strategy and Action Plan 2015, Government of Pakistan

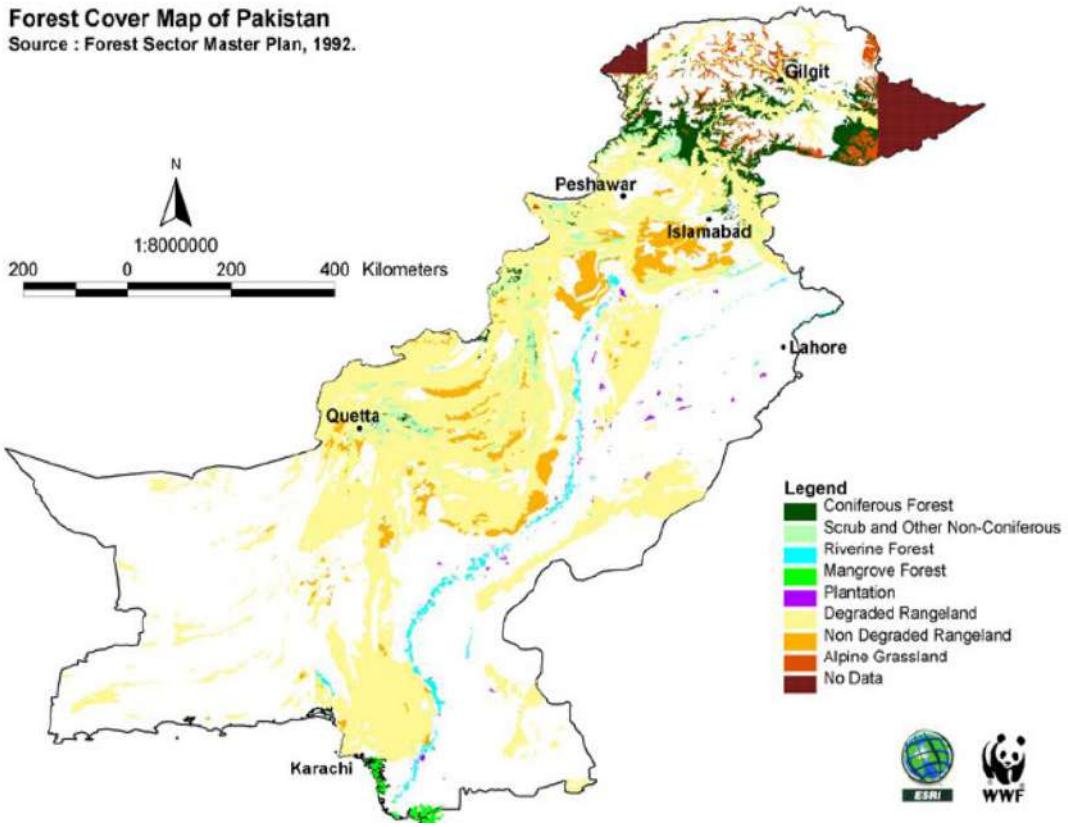



**Figure 4.3: Forest Cover in Pakistan[45]**

### 4.3.5. Protected Areas

Protected Areas are defined as areas dedicated to the protection and maintenance of biological diversity, as well as natural and associated cultural resources. 2.4 percent of forests in Pakistan are managed under the protected area system (FAO 2014[46]), which comprises game reserves, wildlife sanctuaries, and national parks (Government of Pakistan 2015).[47]The Component 1 is not likely to be carried out in protected areas/ sanctuaries and national parks of Pakistan, but Component 2 would have activities in protected areas for afforestation and biodiversity conservation. **Table 4.4** presents a list of National Parks in Pakistan, while **Table 4.5** shows the land areas covered by Protected Areas. The list of game reserves and wildlife sanctuaries is available at World Database on Protected Areas.

**Table 4.4: List of National Parks**

| # | National Park | Established | District(s) | Province |
|---|---|---|---|---|
| 1. | Deva Vatala | 2009 | Bhimber | Azad Jammu & Kashmir |
| 2. | Ghamot | 2004 | Neelum | |
| 3. | Gurez | 2009 | Neelum | |

[45] WWF Pakistan

46 FAO (Food and Agriculture Organization). 2009. "Pakistan Forestry Outlook Study." Working Paper No. APFSOS II/WP/2009/28, Office of the Inspector General of Forests, Ministry of Environment. Asia Pacific Forestry Sector Outlook Study II.

47 GoP.2015. Pakistan National Biodiversity Strategy and Action Plan. https://www.iucn.org/sites/dev /files/import/downloads/nbsap_1st_draft_23_3_15.pdf

| # | National Park | Established | District(s) | Province |
|---|---|---|---|---|
| 4. | Machiara | 1996 | Muzaffarabad | |
| 5. | Pir Lasura | 2005 | Kotli | |
| 6. | Poonch River Mahaseer | 2010 | Kotli, Mirpur and Poonch | |
| 7. | Toli Pir | 2005 | Poonch | |
| 8. | Panjal Mastan | 2005 | Bagh District | |
| 9. | Hazarganji-Chiltan | 1980 | Quetta | Baluchistan |
| 10. | Hingol | 1988 | Awaran, Gwadar and Lasbela | |
| 11. | Shandure-Phander National Park | 2012 | Ghizer | Northern Areas (Gilgit Baltistan) |
| 12. | Central Karakoram | 1993 | Gilgit and Skardu | |
| 13. | Deosai | 1993 | Skardu | |
| 14. | K2 | — | Gilgit, Skardu | |
| 15. | Khunjerab | 1975 | Gilgit | |
| 16. | Qurumber | 2011 | Ghizer | |
| 17. | Broghil Valley | 2010 | Chitral | KPK |
| 18. | Chitral Gol | 1984 | Chitral | |
| 19. | Lulusar-Dudipatsar | 2003 | Mansehra | |
| 20. | Saiful Muluk | 2003 | Mansehra | |
| 21. | Sheikh Buddin | 1993 | Dera Ismail Khan | |
| 22. | Ayub | — | Rawalpindi | Punjab |
| 23. | Chinji | 1987 | Chakwal | |
| 24. | Kala Chitta | 2009 | Attock | |
| 25. | Lal Suhanra | 1972 | Bahawalpur | |
| 26. | Murree-Kotli Sattian-Kahuta | 2009 | Rawalpindi | |
| 27. | Kirthar | 1974 | Dadu | Sindh |
| 28. | Margalla Hills | 1980 | Islamabad | Federally Administered Areas |

**Table 4.5: Protected Areas of Pakistan by Province/Territory (as of 2000)**

| Region/ Province | National Parks | Wildlife Sanctuaries | Game Reserves | Un Classified | Total PAs | Total Area Conserved (ha) |
|---|---|---|---|---|---|---|
| Federally Administered Areas (including AJK, GB and former FATA) | 06 | 06 | 18 | 00 | 30 | 2,238,364 |
| Balochistan | 02 | 15 | 07 | 07 | 31 | 1,837,704 |
| Punjab | 02 | 37 | 19 | 00 | 58 | 3,315,803 |
| Khyber Pakhtunkhwa | 03 | 06 | 38 | 05 | 52 | 470,675 |
| Sindh | 01 | 35 | 14 | 04 | 54 | 1,307,575 |
| Total | 14 | 99 | 96 | 16 | 225 | 9,170,121 |

## 4.4. Socioeconomic Profile

### 4.4.1. Demography

According to 2017 population census reports, the total population of Pakistan is approximately 207 million, up by around 57% since the last census was conducted in 1998[48]. The most heavily populated province is Punjab where more than of the country's population lives, followed by Sindh with 23% of Pakistan's total population. The population density is 250 persons per square km of the major part of the project area.[49] The urban centers are densely populated with an average of 1000 person per square kilometer. The province wise distribution of population of Pakistan is given in **Table 4.4**.

**Table 4.6: Provincial Results of Census 2017**

| ADMINISTRATIVE UNITS | POPULATION 2017 | POPULATION 1998 |
|---|---|---|
| **PAKISTAN** | **207,774,520** | **132,352,279** |
| KHYBER PAKHTUNKHWA | 30,523,371 | 17,743,645 |
| FATA | 5,001,676 | 3,176,331 |
| PUNJAB | 110,012,442 | 73,621,290 |
| SINDH | 47,886,051 | 30,439,893 |
| BALOCHISTAN | 12,344,408 | 6,565,885 |
| ISLAMABAD | 2,006,572 | 805,235 |

Note:-

1. Total Population includes all persons residing in the country including Afghans & other Aliens residing with the local population
2. Population does not include Afghan Refugees living in Refugee villages

### 4.4.2. Literacy and Education

Literacy is defined as percentage of population that can read and write at the age of 10 or above. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), Pakistan has one of the lowest literacy rates in the world, and stands 160th among world nations. Overall 55 % population including 69% male and 45% female is literate[50]. Literacy ratio of Pakistan is provided in **Figure 4.4**.

Education in Pakistan is overseen by the Federal Ministry of Education and the provincial governments, whereas the federal government mostly assists in curriculum development, accreditation and in the financing of research and development. Article 25-A of Constitution of Pakistan obligates the state to provide free and compulsory quality education to children

[48] Pakistan Bureau of Statistics, provincial census result 2017
[49] Pakistan Population Census Organization
[50] Boissiere, M., 2004. Determinants of Primary Education Outcomes in Developing Countries. World Bank, Independent Evaluation Group (IEG), Washington, DC.
Chaudhry, I.S., Rahman, S., 2009. The impact of gender inequality in education on rural poverty in Pakistan: an empirical analysis. Eur. J. Econ. Financ. Adm. Sci.

from age 5 to 16 years. Since the project interventions are across Pakistan, the education institutes present in the project areas include primary schools, secondary schools, higher secondary colleges, degree colleges, universities, technical and vocational institutes.

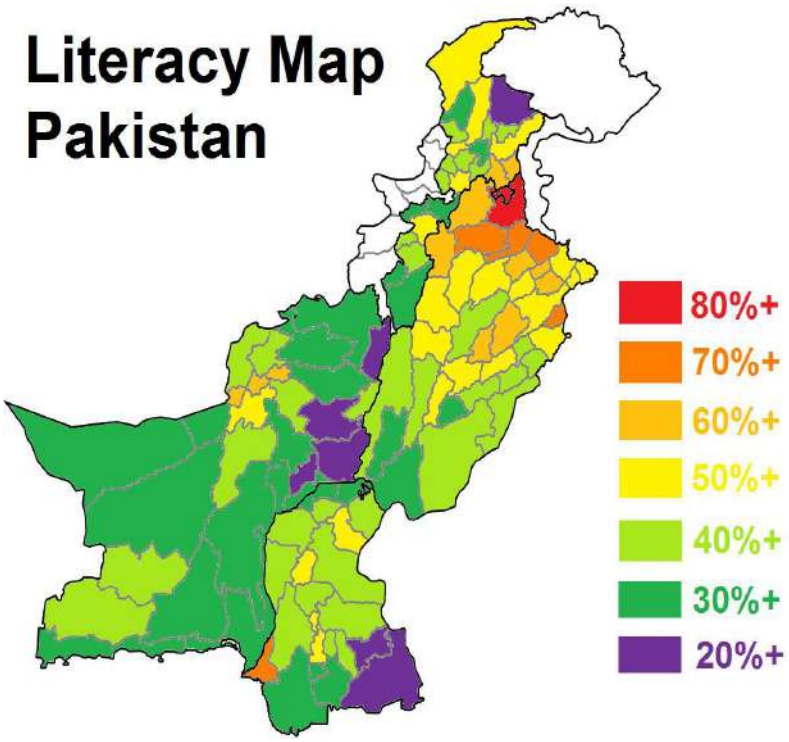



**Figure 4.4: Literacy Ratio Map of Pakistan[51]**

### 4.4.3. Health & Nutrition

Findings from the National Nutrition Survey 2018 exhibit that prevalence of iron deficiency anemia is 28.6% and zinc deficiency was 18.6%. More than half of Pakistani children are deficient in vitamin A. Unfortunately, besides Afghanistan, Pakistan is one of the only two countries where endemic polio transmission continues. The unsatisfactory status of health makes a large portion of the population even more vulnerable in cases of emergencies and disaster.

The provinces in line with federal ministry of health are making efforts to provide quality health care services to the general public. A network of government hospitals and basic health units is operational but limited services are available due lack of resources. Other than government hospitals, private hospitals and clinics are present to fulfill the needs of the public.

### 4.4.4. Occupation

Agriculture is the main source of employment in Pakistan. 42% of the population works in the agriculture, fisheries and forestry sectors, followed by 35% in services (including government) and 22% in industry and associated jobs.[52]

[51] UNESCO
[52] Pakistan Labour Force Survey, 2014-2015

### 4.4.5. Gender

The social and cultural context of Pakistani society is predominantly patriarchal. However, women in mainly urban areas have improved access to education, face fewer problems in mobility and often seek employment. 70-80% of Pakistani women lack social value and status because of negation of their roles as producers and providers in all social roles. The preference for sons due to their productive role dictates the allocation of household resources in their favor. Male members of the family are given better education and are equipped with skills to compete for resources in the public arena, while female members are imparted domestic skills to be good mothers and wives.[53]

Lack of skills, limited opportunities in the job market, and social and cultural restrictions limit women's chances to compete for resources in the public arena. This situation has led to the social and economic dependency of women that becomes the basis for male power over women in all social relationships. The nature and degree of women's subordination vary across classes, regions, and the rural/urban divide. Patriarchal structures are relatively stronger in the rural and tribal setting where local customs establish male authority and power over women's lives. On the other hand, women belonging to the upper and middle classes have increasingly greater access to education and employment opportunities and can assume greater control over their lives.

### 4.4.6. Indigenous Peoples

In Pakistan, the only recognized Indigenous Peoples are the Kalasha[54], residing in 15 villages in three valleys (Bamburet, Birir and Rambur) of the Ayun Union Council of Chitral district in KP province. With an estimated population of 4,184, they form the smallest minority community in the country. They are identified as indigenous peoples due to their distinct language, folklore, and polytheistic religion; differentiating them from the other communities in the area. The community still relies mainly on traditional sources of livelihood including livestock, small-scale cultivation and wage labour, though the other people in this region also have similar occupations. The Kalash people have only recently begun to move towards a cash economy, triggered by the influx of tourists in the area. The three main valleys where the Kalasha live are 30 – 40 km from Chitral Airport, connected to the main town of Chitral by a jeepable road.

[53] ADB Gender Analysis, 2000
[54] Pakistan Poverty Alleviation Fund, Indigenous Peoples Planning Framework, 2014

# Chapter 5. Stakeholders Consultations

This section of the report outlines the stakeholder consultation approach adopted for this project, identifies the concerned groups of stakeholders, and frame process of consultation.

## 5.1. Introduction

The participation of project stakeholders in project planning, design and implementation is now universally recognized as an integral part of environmental impact assessment. The World Bank guidelines lay emphasis on disclosure of information and stakeholder participation at every stage of project execution. The Pakistan Environmental Protection Act 1997 Section 12(3) highlights that "every review of an environmental impact assessment shall be carried out with public participation." United Nations Conference on Environment and Development (UNCED) in 1992 endorsed the process of stakeholder participation and consultation. It emphasizes the role of public participation in environmental decision-making for the achievement of sustainable development.

## 5.2. Objectives of Stakeholder Consultation

In accordance with World Bank Guidelines, public consultations are essential to fulfill the following objectives:

- Exchange of information related to the project and its possible utilization in the project designing/planning and implementation;
- Identification of likely impacts on land, resettlement, loss of livelihood, etc.;
- Ascertaining the most acceptable solutions and mitigation measures for possible issues which could arise during implementation of the project activities;
- Eliciting community comments and feedback on the project;
- Encourage transparency and inculcate trust among various stakeholders to gain cooperation and partnership from the communities, local leadership, and NGOs.
- Record concerns regarding the various aspects of the project, including the existing situation, project area/area of influence, construction works and the potential impacts of the construction-related activities and operation of the project.
- Incorporate mitigations measures to address concerns with project design and implementation.

## 5.3. Consultation Process

The consultation process followed for the project is detailed below:

### 5.3.1. Identification and Classification of Stakeholders

The term stakeholders refer to persons or entities that can either impact or influence the

project, or can be impacted by the project. These include Project Affected People (PAPs)/ local community, associated departments/agencies, NGOs and others, whose assets/land, business, structures, installations, or interests may be impacted due to the project activities. In the sub-project specific ESMPs, the influence or impact of stakeholders on the project, or vice versa, will be elaborated in the form of a matrix and the mitigation measures will be proposed accordingly.

### 5.3.2. Classification of Stakeholders

Project Stakeholders are classified as primary and secondary stakeholders depending on the influence of the project activities:

- Primary Stakeholders: People, groups or institutions directly affected by the project and can influence the project outcome.
- Secondary Stakeholders: People, groups, or institutions that are indirectly affected by the project and can influence project delivery process.

The list of primary and secondary stakeholders for this project is provided in **Table 5.1**.

**Table 5.1**: **List of Stakeholders**

| ***Stakeholders*** | |
|---|---|
| Primary | Pakistan Meteorological Department (PMD) |
| | Provincial Forest and Wildlife Departments |
| | Ministry of Climate Change |
| | Communities within 1 km radius of sub project sites and communities who own and manage the forest resources of the sub-project areas. |
| | Climate Change startups engaged with the project |
| Secondary | Civil Aviation Authority |
| | WAPDA |
| | Provincial Irrigation Department |
| | Federal Flood Commission |
| | Provincial Agriculture Department |
| | Climate Change NGOs and startups |
| | Global Change Impact Study Center |
| | Agriculture Research Council |
| | Provincial Agriculture Departments |
| | Indus River System Authority |

### 5.3.3. Methodology

Broad scope consultation meetings have been conducted with the stakeholders including the PMD officials besides other public and non-public entities. The meetings progressed in the

following manner:

- A brief project description and presentation of ESMF were provided to the stakeholders.
- Stakeholders were given the opportunity to raise queries or concerns regarding the Project.
- Queries were responded to and concerns were documented.

## 5.4. Consultation Findings

Both public and non-public sector entities were consulted as part of the process. Project details were communicated and their concerns and suggestions were recorded and addressed. The summary of sessions is given below and the consultation report including individual responses along with the photographs of sessions are annexed as **Annexure 10**.

### 5.4.1. Consultation with PMD

During the first round, consultative meetings were held with officials of the PMD in Islamabad and Lahore. In Islamabad, the meeting was attended by Mr. Hazrat Mir - Deputy Director General / Chief Meteorologist, Mr Jan Muhammad Khan - Director Planning, and Mr Aleem ul Hassan - Deputy Director. In Lahore, consultations were held with Mr. Muhammad Riaz (Chief Meteorologist), Mr. Fayaz Nazir (Senior Electronic Engineer), and Mr. Sahibzad Khan (Director) of the Regional Meteorological Center, FFD.

Concerns raised by stakeholders during consultation process are described below:

- Pakistan Hydro-Meteorological and Ecosystem Restoration Project has several components managed by various partners. There is high risk that incompletion or non-performance at one component will impact the other components, affecting the sustainability of the project. It is suggested to provide PMD autonomy for completion of project components.
- No separate funds should be allocated for equipment training; the provision should be made in the contractual requirement of manufacturer installing the equipment for the whole project.
- Required experts for various components of the project should be hired locally. If international consultant is needed, there should be open competition among local and international experts.
- More than 40% of the project budget has been allocated for experts needed from the World Bank.
- Provision of climate specific data needed for climate change assessments should be included in the project.
- Height of the radar should be taken into consideration in the presence of population nearby.
- NOC from CDA, LDA, CAA, and local authorities should be taken prior to construction work.
- AWS should be installed in government owned land in a guarded locality to avoid damage to the equipment.
- Cost of land acquisition (if required) should be made part of the project.
- Currently, there is no space available at the FFD center for new radar installation; however, a possible solution is to shift the Pilot Balloon Observatory (PBO) building to the Regional Meteorological Center building which is right across the road and has ample space to house PBO. This scenario would have the following benefits:

  - The new radar building would be located right next to the existing one.
  - It would not hamper the efficiency of the observation instruments in the front yard as it would be built behind the existing radar.
- Height of the tower should be elevated above 100 ft to increase efficiency.
- Latest and most sustainable building standards should be followed to increase the life of the infrastructure for long term benefits.
- Power backup system should be up to the mark. New radar technology uses less power, so a possibility of hybrid systems should be considered
- Auto Calibration rain gauges should be installed at different ranges i.e. 50, 100, 200, 240 and 480 kilometers. This would increase the efficiency of current and proposed systems.
- Maintenance arrangement after the project implementation must be chalked out. The provision of spares must be guaranteed for at least 10 years.
- Additional staff must be hired for the new system, which should include at least 5 meteorologists and 4 sub-engineers.
- Vehicles should be provided for remote sensing.
- Staff should all be given trainings on radar meteorology.
- Coordination for the project implementation should be improved with timely information dissemination.
- High resolution output systems should be used.

Some of the issues discussed during the meetings informed the project design, while many points will be incorporated in finalizing the sub-project designs.

### 5.4.2. Consultation with Relevant Public Sector Entities

The stakeholder consultation held at NDRMF on 18th Dec 2019 for public sector proved to be an important session for the evolution of ESMF. The stakeholder consultation revolved around many different topics regarding the implementation of ESMF. The main concerns that were raised in the consultation meeting were regarding the incorporation of riverine forests in the component 2 of the ESMF document which plays an important role in the afforestation of Pakistan ecology. It was also brought up by multiple stakeholders that the Ten Billion Tree Tsunami (TBTT) and conservation of biodiversity in component 2 were somehow overlapping and that needs to be revised or classified as different entities and elaborated to avoid any confusion. The mechanism of post-project activities especially the monitoring of forests after the end of 5-year project funded by World Bank was discussed and it was recommended to devise a plan for monitoring of forests. In the end of the session it was concluded that further stakeholder consultations need to take place in all the provinces of Pakistan including Gilgit-Baltistan and Azad Jammu and Kashmir for detailed feedback from the concerned departments.

### 5.4.3. Consultation with NGOs

All major NGOs were invited to the consultations to record their concerns and feedback. Some of the major concerns included the monitoring and compliance mechanisms for the subprojects and NDRMF's capacity to ensure compliance; as these mechanisms are inefficient at the government level due to the lack of capacity. Likewise, participants suggested to define the key priority areas and activities under each subcomponent for more clarity on what the project scope entails. Subsequently, it was suggested to involve stakeholders at all stages of the project including relevant provincial departments and communities to ensure smooth functioning of the project and to ensure that local context and

problems are being catered for. Some of the comments revolved around the site specific impacts of the project such as the restriction to access and wear and tear that will be experienced as a result of traffic movement. They were informed that such matters will be discussed in the site specific ESMPs that will be prepared at the inception stage of the subprojects. Stakeholder from academia emphasized the importance of involving research groups and institutions to drive the focus of activities in a direction that will help in avoiding duplication of efforts and will guide the subproject activities towards efficiency.

Furthermore, it was suggested to establish a strong and effective coordination mechanism to facilitate parallel functioning of the government departments and non-governmental entities.

## 5.5. Stakeholders Consultation Framework

A continuous process of keeping the stakeholders informed and receiving their feedback at various stages of project implementation will be carried out to improve the acceptability of the project by the stakeholders and ensuring their participation in the process of sub project preparation and development. Consultations with the potentially affected communities would be done subsequently in sub-projects' design phase. Sessions will be kept informal to encourage participants to express their concerns, questions and opinions about the project activities in addition to seeking clarification regarding the project. Project team will highlight the process of project implementation and document any aspects, which need to be covered in detail during the execution stage.

A strategy for public consultation during the implementation of the Project is delineated, for different stages of the project, i.e. design, construction and operation. The consultations framework at each stage is explained in **Table 5.2** below.

**Table 5.2: Public Consultation/ Participation Framework**

| Objective | Target Stakeholders | Implementation Stage | Responsibility |
|---|---|---|---|
| Meetings/scoping sessions/ survey/interviews etc. to inform stakeholders about project and obtain feedback about the project design. | Potential stakeholders in the sub-project area, general public, and line departments/ agencies especially PMD, CAA and RMC | Design Stage of sub-projects | NDRMF/ IPs |
| Public awareness sessions to share the ESMP/RAP with the project affected persons/communities; and other stakeholders. | Potential stakeholders in the sub-project area, general public; and line departments/ agencies. | Design/ Implementation Stage | NDRMF/ IPs |
| Consultations during formation of PAP Committees (PAPCs) | PAPs in the sub-project area(if any) | Construction Stage | IPs |

| Objective | Target Stakeholders | Implementation Stage | Responsibility |
|---|---|---|---|
| Setting of Grievance Redress and Community Complaint Register | Stakeholders in the sub-project area. | Construction Stage | NDRMF/ IPs |
| Consultations during internal monitoring | Stakeholders in the sub-project area | Construction Stage | IPs |
| Fortnightly meetings at project sites | IPs | Construction Stage | NDRMF |
| Consultations with the Stakeholders during the Independent Monitoring | PAPs/communities in the sub-project area | Construction Stage | NDRMF/ IPs / Independent monitoring consultant |
| Consultations with the Stakeholders relating to the leftover tasks | PAPs/communities in the sub-project area | Operation Stage | NDRMF/IPs |
| Consultations with the Stakeholders during the site visits by the World Bank Review Missions | NDRMF /IPs/contractors as well as sub-project PAPs/ Communities | Construction/ Operation Stage | NDRMF/ IPs |

# Chapter 6. Environmental and Social Impact Assessment and Mitigation Measures

## 6.1. Pakistan Hydro-meteorological and Ecosystem Restoration Project

The Pakistan Hydro-meteorological and Ecosystem Restoration Project has two main components. An analysis of associated environmental and social impacts of each project component are discussed in this section.

### 6.1.1. Component 1: Hydro-meteorological and Climate Services

Sub-components 1.2A and 1.2E will involve civil works at various locations in Pakistan. The project interventions under 1.2 E may result in limited and reversible environmental impacts during construction due to their location at existing PMD office facilities in commercial settings, however, social impacts during construction may rate a little higher due to presence of sensitive social receptors near MMC and AWS intervention. The project locations for the AWS are not yet known.

### 6.1.2. Component 2: Nature-based Solutions and Climate Adaptation

Potential locations and methodology for forest conservation, and biodiversity and land protection areas have been pre-identified by the provincial governments. Actual interventions will be selected through prioritization and selection process carried out between NDRMF and provincial governments during project implementation. The activity areas under PHCSPwould be supported under this component.

## 6.2. Impact Assessment Matrix

Sub-project activities are to be screened, identified and evaluated on the impacts, nature, extent, duration, scale and other parameters are to be studied along with conditions of the environmental and social receptors (secondary baseline). Mitigation measures are based on the magnitude of the impact, sensitivity and behavior of the environmental and social receptors at the sub-project sites and, regulatory requirements using best management practices. The impact assessment matrix of design, construction and operations/post construction phase is given **Table 6.1.**

**Table 6.1: Potential Environmental and Social Impacts (Prior Mitigation)**

| Impacts on | | Component 1 | | | Component 2 | | |
|---|---|---|---|---|---|---|---|
| | | Design | Construction | Operations | Design | Construction | Operations |
| Physical Environment | Soil Erosion | M- | H- | | L- | M- | L+ |
| | Land use | M- | L- | | L- | M- | |
| | Ambient Air Quality | M- | H- | M- | | L- | M+ |
| | Surface Water Quality | M- | M- | M- | | M- | L- |
| | Groundwater Quality | M- | L- | | | M- | |

| Impacts on | | Component 1 | | | Component 2 | | |
|---|---|---|---|---|---|---|---|
| | | **Design** | **Construction** | **Operations** | **Design** | **Construction** | **Operations** |
| | Water/ Electricity /Gas / Fuel Consumption | H+ | M- | M- | | | L+ |
| | Solid Waste | M- | H- | M- | L- | L- | |
| | Ambient Noise level | M- | H- | | | L- | |
| | Electromagnetic Field | M- | H- | H- | | | |
| | Climate | M- | M- | M- | M+ | M+ | H+ |
| Biotic Environment | Flora | | M- | | L- | L- | H+ |
| | Fauna | | M- | | M+ | L- | H+ |
| | Biodiversity / Ecology | M- | L- | | M+ | L- | H+ |
| Social Environment | Resettlement | M-to H- | L- | | L- | L- | |
| | Traffic | | H- | M- | L- | L- | |
| | Public Health, Safety and security | | H- | | | L- | |
| | Health and Safety of Workers | | H- | M- | | L- | |
| | Economy | M-to H- | H+ | H+ | M+ | M+ | H+ |
| | Employment | | H+ | H+ | L+ | M+ | H+ |
| | Drinking Water | | | | | L- | L+ |
| | Loss of land holdings and livelihood | M-to H- | L- | H+ | M- | L- | M+ |
| | Cultural/religious and Archaeological resources | | L- | | L- | | |
| | Labor Influx | | L- | | | L- | |
| | Indigenous People | | | | L- | M- | M+ |

H- = High Negative Impact;

M- = Moderate Negative Impact;

L- = Low Negative Impact;

H+ = High Positive Impact;

M+ = Moderate Positive Impact;

L+ = Low Positive Impact.

Blank =None

## 6.3. Design considerations for minimizing the potential E&S impacts'

The design phase activities of the sub projects include the infrastructure design, site selection and preparation for civil works. These activities under Component 1 include scaling up of facilities at PMD offices within existing PMD owned land, installation of Weather Surveillance Radar and Automatic Weather Stations. Component 2 activities will encompass promotion of nature-based solutions including afforestation activities and projects on coastline. The associated impact of activities under Components 1 and 2 of the project on ecological, physical and human environment are presented in this section. The exact nature of activities under Component 2 are not yet defined; however, the impacts are assessed based on the anticipated scope.

### 6.3.1. Biodiversity and Natural Resource

None of the sub-project activities under Component 1 will be carried out within the sensitive areas as per Environmental Protection Act, Forest and Wildlife Protection Act of each province. The project sites for upgradation of PMD facilities, WSR are expected to be at existing locations of PMD stations/offices or on land owned by the government, thus at a reasonable distance from critical and sensitive receptors. The AWS will be across the country and exact locations are not known. However, the AWS sites are planned to be located in the PMD lands and not be placed in the ecologically sensitive areas. The sites for Component 1 may require tree cutting and vegetative clearing.

The focus of the activities to be conducted under Component 2 will be forest conservation, biodiversity and land protection. Forest conservation will include afforestation, reforestation and regeneration of natural forests, mangrove, vegetation and soil conservation in hilly and river catchment areas and protection of rangeland. Similarly, biodiversity and land protection will include prevention of land degradation through better planning, conservation and management of protected areas and other natural habitats.

The potential impacts associated with Component 2 are generally positive but require particular attention to certain aspects, e.g selection of suitable plant species for afforestation and single species in large area will lead to the single structure of forest, narrowing of biodiversity and genetic pool. As a result, forest landscape and biodiversity will be affected, the mechanisms of pest and disease control will be weakened, and the occurrence of diseases and insect pests will increase. Similarly, fauna could be impacted if activities are conducted in protected areas for endangered faunal species. However, afforestation activities will be conducted in natural forest areas and locations sensitive in terms of wildlife will be avoided. The screening will make sure the potential impacts are localized and reversible, and all Category A type activities will be excluded. Sub-component 2.2 may involve community physical infrastructure (CPI) that may require limited levels of tree cutting and vegetation clearing.

The following mitigation measures are proposed.

***Mitigation Measures***

- Incorporate technical design measures to minimize unnecessary removal of trees and vegetative cover;
- Plan for compensatory planting of eight trees against each fallen tree of similar floral function;
- Locations for AWS will be selected outside/at a reasonable distance from the environmentally sensitive areas and archeological/cultural and religious sites of importance.
- Disallow introduction of invasive/ exotic species; and recommend native species for plantation.
- Avoid use of pesticides for plant growth.
- Rangelands should not be selected for afforestation activities.
- Prohibit introduction of plant species that have high water requirement in water logged areas.
- Selection of local species for afforestation/reforestation. Selection should also consider the habitat preference/requirements of the species.
- Tree species selection should be based on the principle of applying different approaches to different land and different trees. Furthermore, the selection should not only have high biomass and high amount of fixed carbon, but also be suitable to conserve water and soil, break wind and fix sand.
- Afforestation and biodiversity conservation activities should be conducted based on available research on the native environmental and ecological parameters to avoid any impacts.
- Planting of eight trees for every tree cut during construction;
- Do not introduce invasive or exotic species through plantation.
- Mixed forest mode should be adopted to avoid single structure of forest that could damage biodiversity.
- Several tree species with several afforestation modes interval should be adopted in every project region.

### 6.3.2. Land Acquisition, Resettlement, Loss of Livelihoods

Construction activities are expected to be on government owned land. In few cases, removal of encroachments might be required. AWS installation may require acquisition of very small parcels (~ 500 $ft^2$ for one AWS) of land from government and private land owners.

Similarly, there will be no significant land acquisition/resettlement involved in Component 2 as activities will be conducted on designated forest areas. In case of CPIs, voluntary land donation mechanism will be used if the need arises. However, mitigation measures are proposed in case any such issues arise during implementation of both components.

Component 2 might involve sub-projects where involuntary restriction of access, either temporary or permanent, to legally designated parks and protected areas might happen. Such

restriction to access might also happen to some natural habitats or natural resources that are not officially designated as protected areas. This could result in adverse impacts on the livelihoods of the displaced persons. The potential negative impacts will be mitigated using the Process Framework approach. Such restriction to access might also happen to some natural habitats or natural resources that are not officially designated as protected areas.

***Mitigation Measures***

If land acquisition/resettlement will be required or loss of livelihood will occur, impacts will be mitigated by preparing a RAP in accordance with the Resettlement Policy Framework (RPF), provided in ***Chapter 8*** of this ESMF and WB OP 4.12. Similarly, if any project activity causes any restrictions in access to legally designated parks and protected areas, or, to natural habitats/natural resources in areas which are not legally protected areas, the Process Framework approach will be adopted as per OP 4.12. In such cases, the implementation partner will prepare a process framework, describing the participatory process for preparation and implementation of the sub-project components; determining the eligibility criteria for displaced persons; identification of measures to assist the displaced persons in their efforts to improve their livelihoods, or at least to restore them; and grievance and conflict resolution mechanism. In cases of restriction to access to natural resources not designated as protected ARAP or RAP will be prepared to mitigate impacts of livelihood loss, economic displacement, etc. as per guidance provided in the RPF which has been prepared for the project. Natural Disasters

The project sites are prone to natural disasters including earthquakes and floods. The earthquake of 2005 caused damage to a number of engineering structures in Pakistan. Similarly, the 2010 flood was devastating for various regions of country. The impact is likely to be high in case of a natural disaster. In Component, floods may damage saplings or CPIs. However, this impact will be negligible as component 2 will not involve construction of any major structures.

***Mitigation Measure***

- The building design will be earthquake resistant according to the Building Codes of Pakistan provision and international best practices;
- The building design will include emergency exits and alarm system;
- Planning, designing and constructing the building to minimize any potential flood damages using following guidelines:
  - elevating as much of the building as possible above the design flood level,
  - designing the building foundation and any portions subject to flooding to withstand design flood conditions and loads,
  - using flood-damage-resistant materials for any portions of the building below the design flood level
  - where flood proofing is permitted, employing appropriate methods and materials to either dry-flood proof or wet-flood proof those portions of the building below the

design flood level

### 6.3.3. Water /Electricity/ Natural Gas/ Fuel Consumption

There will be an increase in resource consumption due to construction work and subsequently project operations due to increase in staff. It will pose pressure on localized water and energy supplies of the project area of interventions. The impact is likely to be high as the sub-project buildings and tower will host more than 200-1000 officials. In case of Component 2, there could be a low positive impact if fuel wood trees are included in the project design.

***Mitigation Measures***

- Green building concept and international best practice will be adopted for design provisions for water, electricity and natural gas conservation;
- Water meters will be made part of the design in each building to monitor the consumption;
- Design of buildings will include installation of Solar Panels;
- Provision of Low Voltage electrical appliances will be made in procurement procedures;
- Prepare Energy and water conservation plan for construction.

### 6.3.4. Universal Accessibility

People with disabilities, parents with baby strollers, delivery workers, and others might need small provisions in the building design for easy access. However, accessibility issues are not confined to physical structure only. If not designed properly information technology products such as hardware, software etc. might cause accessibility issues for the intended users.

***Mitigation Measures***

- The project design will incorporate the concept of universal accessibility Design so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability.

## 6.4. Potential Environmental and Social Impacts during Construction and Mitigation

The potential impacts associated with the construction and rehabilitation of PMD centers, research centers, field offices, installations of weather equipment and radars along with impacts associated with implementation of Component 2 activities across the country are elaborated below:

### 6.4.1. Landscape/Soil

Upgrading of PMD offices and research centers under Component 1 is expected to be on existing sites in use by PMD having urban and semi urban set up surrounded by commercial and residential areas. Hence there will be no drastic change in the landscape during

construction. The location for AWS may have trees, shrubs and water streams, however, the locations will not in be an environmentally sensitive area with endangered vegetation. Construction and civil works are likely to involve site clearance, vehicular, labour and machinery movement causing soil erosion and compaction. There is also a potential for contamination of soil via runoff from construction activities including oil spills, construction material, dredged / spoil materials and construction waste. The impact is likely to be high, however, the duration be will be confined to construction phase.

Component 2 activities may have potential impacts on the soil as a result of soil preparation for plantation. Soil preparation before afforestation could improve the soil granular structure, increase the survival rate of population and promote tree growing and developing to obtain fast growing and high yield. However, the process may cause damage to the vegetation and disturbance to the top soil layer. Unsuitable soil preparation can increase soil erosion, and water and soil loss, leading to environmental deterioration and reduction of land productivity. Hence, it is necessary to adopt effective mitigation measures to prevent soil erosion for the negative effects of soil preparation.

***Mitigation Measures***

- Removal of vegetation and trees will be avoided to the extent possible
- Water will be sprinkled during building of foundation to avoid erosion.
- Construction materials will be stored in proper stores on impervious sheets to avoid any soil contamination.
- Machinery and vehicles will be operated at designated routes to avoid erosion and compaction of un-impacted soils.
- Visual Inspection will be carried out for land contamination and dust emissions.
- The soil contaminated from minor and moderate spills will be removed and will be handed over to waste contractor for treatment at nearest incineration facility to the sub-project sites.
- Optimum soil preparation time should be given which is usually a year before the plantation. In order to increase the survival rate of afforestation, planting should start from the spring or rainy season of the second year giving backfill soil enough time to age and replenish its water content. This optimum time will increase the survival rate and will decrease the impacts of soil erosion.

### 6.4.2. Ambient Air Quality and Climate

The construction activities at sub-project sites will cause impact on air quality. Cement mixers (Batch Plant), movement of the machinery and soil excavation may release particulate matter and fugitive dust. Construction vehicles and generator are likely to generate dust and exhaust emissions. Impact on local air quality could be high, however, there will be minimal increase in GHG emission from above mentioned sources.

Component 2 activities will improve the overall quality of air and will help improve the overall climate of the project areas. However, there might be minor impacts on air quality associated with soil preparation and planting, especially when vehicles are used.

***Mitigation Measures***

- Follow NEQS as performance indicators;
- Contractor shall provide an Emissions Monitoring Plan and an operations and maintenance plan for construction machinery and vehicles;
- Water will be sprinkled twice a day to avoid fugitive dust emissions;
- Unnecessary movement of vehicles will be avoided;
- Open burning of solid waste from the Contractor's camps should be strictly banned;
- Wind breaks /barriers (either natural or constructed) will be deployed to reduce the possibility of suspended particles in air;
- Raw materials such as cement, gravels and sand will be kept under sheet covers;
- Necessary PPEs will be provided to prevent and mitigate exposure to dust.
- In order to further reduce the environmental impact, the concrete batching plant will incorporate the following design and practices:
  - Cement will be transferred directly from barges to the plant.
  - All mixing will be in the enclosed electric motor driven plant mixer, NOT in trucks.
  - Truck loaded with concrete will be in wet form.
  - All washing water used by the batch plant and storm water will be collected and stored and recycled for re-use.
  - No water will be discharged outside the plant boundary.
  - Concrete recycling machine be used to recycle waste material to slurry water and aggregates for reuse.

### 6.4.3. Surface/Ground Water Resources

Construction activities under Component 1 may encourage soil erosion and increase the sediment loads into the city drainage, while accidental leaks/spills of oil/fuel from storage tanks or maintenance vehicles can also pollute surface waters. Construction waste and oil spills, if left unattended will result in forming leachate that will percolate through the soil strata and may contaminate the groundwater table. The Component 2 activities would produce soil erosion if the soil preparation activities are not properly managed.

***Mitigation Measures***

- Debris Management to be included in the Solid Waste Management Plan; the contractor will ensure that construction debris does not find its way into the drainage or water channels;
- Prohibit washing of machinery and vehicles in surface waters, provide sealed washing basins and collect wastewater in sedimentation/retention pond;

- Construction work close to streams or other water bodies will be avoided, especially during monsoon period;
- All fuel storage will be properly marked to highlight their contents with a concrete pad underneath to prevent water contamination in case of leaks or spills. Daily monitoring will be carried out for leaks. Shovels, plastic bags, and absorbent material will be placed near fuel and oil storage or handling areas to attend spills and leaks;
- Used oil and vehicle related waste will be transported to local contractors for recycling or reuse;
- Diverting work area runoff into properly designed and constructed sediment traps or drainage collection system to ensure that exposed soils are not eroded. Runoff velocities in ditches or other drainage routes, or along slopes, to be kept low to minimize erosion potential. Runoff outfall locations to be protected with erosion resistant material, if required.
- Proper disposal of solid and sewage waste from workers camps to ensure it is not disposed in the drainage channel.
- Excess soil should be covered to prevent run off due to rain.

### 6.4.4. Water /Electricity/ Natural Gas and Fuel Consumption

There will be an increase in water, electricity, natural gas and fuel consumption during construction. Preparation of sand, cement mortar, curing of walls before and after plastering require large quantities of water.

The impacts of resource consumption as a result of component 2 activities will only have a minor impact during implementation phase due to influx of labor. Keeping in view the duration of implementation of activities under this component, the significance of this impact has been assessed as low.

***Mitigation Measures***

- Construction staff will be trained on water conservation practices to avoid excessive loss;
- Water required for construction should be obtained in a way so that water availability and supply to residing area remains unaffected;
- Approval will be attained from relevant departments prior to construction work.
- Prepare **Energy and water conservation plan** for construction**.**

### 6.4.5. Solid Waste Generation

During construction phase, solid waste can be generated from discarded equipment parts, scrap metals, equipment boxes, wood parts, empty bags, and leftover construction debris. The excavated material may also be considered as solid waste as it would require disposal. Solid waste will also be generated from workers camps at the construction sites. Construction waste may contain hazardous / toxic chemical materials including:

- Asbestos (pipe covers flooring and building material)
- Lead (Roofing material and pipes)

- Cadmium (used as corrosion resistant agent in steel)
- Polyvinyl Chloride (pipes)
- VOCs (formaldehyde in form solvents, paints, synthetic coating cause)
- Silica (in various building material)
- Wood preservatives (Creosotes and Arsenic)
- Halogenated flame Retardants (mixed in concrete construction material)

***Mitigation Measures***

- **Solid Waste Management Plan** will be prepared for all sub-project sites to be used by Construction Contractor. In case of the occurrence of toxic/hazardous chemical materials, it will be handled according to hazardous waste management best international practices. The **Waste Management Plan** will be prepared with following provision:
  - Solid waste collection, segregation, storage and disposal will be carried out for waste generated. For at source segregation separate waste bins will be placed at sub-project sites. Recyclable material will be segregated whereas non-hazardous waste will be disposed-off properly at approved disposal site;
  - Labeling of containers will be carried out including the identification and quantity of the contents, hazard information;
  - Marking of Hazardous/toxic waste 'if generated' separately and disposal using international best practices through registered contractor;
- Used oil will be collected in separate containers stored on impervious platform with restricted access and must be sold to licensed contractor;
- Burning of solid and waste oil should be strictly prohibited
- Training of workers will be carried out in the storage and handling of materials and chemicals that can potentially cause soil contamination;
- **Emergency Response Plan** will be prepared to address the accidental spillage of fuels and hazardous/toxic material, fire, vandalism and natural hazards;
- On completion of the construction phase of the project, the contractor will be required to rehabilitate the site. Rehabilitation will include removal of all construction materials and wastes, and the grading and landscaping of all exposed sites that may be prone to erosion. Where natural erosion protection measures may not be possible or practical, suitable physical erosion protection methods will be used.

### 6.4.6. Noise Levels

The construction activities are likely to generate high noise levels from construction and excavation work such as heavy earth moving equipment/ machinery, pilling work, welding, cuttings, drilling, grinding, material loading/offloading vehicles and other transport etc.

In case of the sub-projects construction activities are restricted to a confined area within the site. Impact of noise is likely to be high from baseline noise levels (60-70dB). Noise impact will be high to the workers and moderate to the residents. **Table 6.2** details the impact of

noise at various levels. Construction workers may suffer from Noise Induced Hearing Loss (NIHL) due to civil and mechanical work that may generate higher levels of noise.

**Table 6.2: Noise Impact**[55]

| Noise level dB | Impact |
|---|---|
| 60 | Hearing damage in 8 hours |
| 80 | Hearing damage in 8 hours |
| 85 | Hearing damage in 2 hours |
| 100 | Hearing damage in 2 hours |
| 110 | Hearing damage in 30 min |
| 120 | Hearing damage in 7.5 min |
| 130 | Pain threshold |
| 150 | Hearing damage in 30 sec |
| 300 | Complete hearing loss |

***Mitigation Measures***

- The location for stationary sources of noise such as concrete mixers and pumps will be selected at a reasonable distance from residing population. The cement tankers will be working inside enclosure with cladding to reduce noise;
- The construction material loaders will only operate during night time as per rules of traffic police in the sub project areas. Working hours will be allocated for the use of batch plant, equipment and other machinery;
- School time and late-night construction activities will be avoided;
- Use of noise barriers in locations next to schools;
- Blowing of horn will be strictly prohibited;
- Noise monitoring will be carried out at various locations using noise meters. Site labor working in high noise area where noise level exceeds 85 dB (A), will wear earplugs and ear muffs;
- Noise level of 55 dB at day and 45 dB at night time will be maintained.
- Vehicle used of construction or planting activities will be regularly inspected to keep good condition.

### 6.4.7. Flora and Fauna

Since the sub-project locations under component 1 are expected to be on existing sites in use by PMD or government owned land having urban and semi urban set up, there are no potential impacts on local flora and fauna. However, construction activities may require cutting of trees and clearing of vegetation. The ecological impacts of the project are not likely to be beyond the immediate footprint of the construction site.

[55]Source: Urbanization and Sustainable Cities 100: Environmental Science, International Science, 5th edition (1991) Cunningham Saigo

However, the impacts of activities under component 2 may have impacts on flora if unsuitable afforestation mode is selected, e.g. single species in large area will lead to the single structure of forest, narrowing of biodiversity and genetic pool. As a result, forest landscape and biodiversity will be affected, the mechanisms of pest and disease control will be weakened, and the occurrence of diseases and insect pests will increase. Similarly, fauna could be impacted if activities are conducted in protected areas for endangered faunal species. However, afforestation activities will be conducted in natural forest areas and locations sensitive in terms of wildlife will be avoided. The screening will make sure the potential impacts are localized and reversible, and all Category A type activities will be excluded.

***Mitigation***

- Planting of eight trees for every tree cut during construction;
- Do not introduce invasive or exotic species through plantation.
- Mixed forest mode should be adopted to avoid single structure of forest that could damage biodiversity.
- Several tree species with several afforestation modes interval should be adopted in every project region.
- Select local species for afforestation/reforestation considering the habitat requirement/preference.

### 6.4.8. Public Health and Safety

Construction activities and movement of heavy vehicles at construction sites and access service roads may result in road side accidents, particularly with the residents who may not be familiar with the presence of heavy equipment. Roads and streets, particularly in urban areas may also be blocked during construction. For example, the MMC in Islamabad is located near schools. There will be movement of school children in the vicinity during certain hours of the day.

***Mitigation Measures***

- Train drivers operating heavy vehicles in road and pedestrian safety;
- Set appropriate speed limits to avoid accidents;
- Use of heavy vehicles on public roads will be avoided during hours when students are coming to school or leaving school;
- Placement of construction and diversion signage, particularly at urban areas and at sensitive/accident-prone spots, in accordance to a **Public Safety Plan**;
- Provision of alternate routes for use by the public.
- Preparation of traffic management plan in collaboration with the traffic police, especially where schools, hospitals or any other such facility exists near the project site.

### 6.4.9. Workers Health and Safety

Use of heavy machinery and handling of hazardous waste and chemicals may result in health impacts for workers on the construction site. Presence of asbestos in old building material is hazardous to health.

Similarly, occupational health and safety could be an issue under component 2, if works are conducted on steep slopes.

***Mitigation Measures***

In accordance to the **Workers Health and Safety Plan**, ensure:

- Onsite first aid kits will be kept at construction sites and randomly moving vehicles\machinery, and selected workers will be provided first aid training.
- In case of an incident involving injury, the injured will be taken to the nearest medical facility after providing necessary first aid.
- Provision of clean drinking water will be ensured for the construction crew;
- Hygiene inspections will be carried out to avoid disease epidemic;
- In case of unlikely incidents (fire, vandalism) the workers will be evacuated and emergency response and law enforcement agencies will be engaged;
- Fire safety alarms will be installed at various locations;
- Fire extinguishers will be placed at various locations including a water hose installation at ground level;
- Fire safety and emergency response trainings will be conducted;
- Hazards indicator signs and firefighting equipment will be installed;
- The construction crew will be trained on important aspects of workplace safety;
- Construction machinery operators and drivers will be trained to avoid associated accidents using machines and vehicles;
- Flammables and other toxic materials will be marked and stored at secured sites;
- Do not allow workers with inadequate training to operate heavy machinery;
- Provision of appropriate and high quality Personal Protective Equipment (PPE) to workers such as gloves, vests, hard-hats, masks etc.;
- Train workers in the use of PPE and safety measures while using heavy machinery and handling chemicals.
- Follow guidelines for Asbestos and Asbestos based product use in construction **(Annexure 4)**

### 6.4.10. Physical /Cultural/ Archeological Resources

The sub-project locations may have religiously and culturally important sites at a reasonable distance. Excavation work during construction may result in the uncovering of ancient sites or artifacts. Impact is likely to be low for example the only known sensitive site close to sub

project MMC is a graveyard which will not have any direct and indirect impacts.

***Mitigation Measures***

- Construction staff will be trained and informed on identifying the evidence of archaeological/historic remains;
- In case evidence of archaeological remains is found during construction activities, the actions listed below will be undertaken.
- Excavation work in the vicinity of the find will be stopped;
- Assistance will be sought from the nearest office of the Department of Archaeology and Museums to identify the remains;
- If the department decides to salvage the find, PMD will provide assistance.
- Detailed procedure for Archaeological Chance Finds included in **Annexure 5**.

### 6.4.11. Traffic Management

The sub-project sites in urban areas may be close to socioeconomic sensitive receptors like schools, colleges, offices and hospitals. The construction work may likely impact the traffic flow. Increase the traffic flow will occur as a result of:

- Use of trucks for movement of construction material to project site;
- Mobilization and use heavy equipment for construction;
- Use of pressure horns.

This slight increase in traffic may also cause accidental injuries, deteriorate ambient air quality and generate noise. It may also cause restrictions to access, traffic congestion and nuisance to the general public.

***Mitigation Measures***

- Vehicles will be inspected prior to start of construction work.
- Alternate routes will be created to avoid disturbance to school and hospital;
- Construction site will be barricaded to minimize accidental injuries and visual nuisance to the general public;
- Movement of construction equipment will be limited to specific duration when there is least disturbance to the residing offices e.g. after school timings;
- Adequate road signs will be erected to warn general public;
- The contractor will be advised to follow vehicular maintenance to reduce engine noise;
- Drivers will be trained to follow the designated routes and avoid honking;
- The construction trucks will be adequately covered with tarpaulin covers to avoid flow into air.

### 6.4.12. Labor Influx

In some cases, even a modest labor influx already may lead to negative impacts on the host community. The induction of outside labor may create social and gender issues due to the

labor force being unaware of local customs and norms. It may also cause hindrance to the mobility of local women for working in the field, herding livestock, picking fuel wood, etc.

The list below indicates common categories of risks associated with labor influx:

- Risk of social conflict - between the local community and the construction workers, related to religious, cultural or ethnic differences, or based on competition for local resources.
- Increased risk of illicit behavior and crime - or a perception of insecurity by the local community. It can include theft, physical assaults, substance abuse, prostitution and human trafficking.
- Increased burden on and competition for public service provision - additional demand for the provision of public services, such as water, electricity, medical services, transport, education and social services.
- Increased risk of communicable diseases and burden on local health services - can result in an additional burden on local health resources.
- Camp related land use, access roads, noise and lights.
- Gender-based violence - inappropriate and criminal behavior, such as sexual harassment of women and girls, exploitative sexual relations, and illicit sexual relations with minors from the local community.
- Child labor and school dropout - increased opportunities for the host community to sell goods and services to the incoming workers can lead to child labor and school dropout.

***Mitigation Measures***

The following mitigation measures have been proposed:

- Local population will be given preference in construction related jobs. Most unskilled workers will be hired from local communities, while for skilled manpower also, first choice will be given to local area residents. The bidding documents will include specific requirements that minimize the use of expatriate workers and encourage hiring of local workers, thereby minimizing labor influx.
- The Contractor will prepare the construction camp management plan which, in addition to other components, will include the labor influx management aspects.
- The Contractor will select the specific timings for the construction activities particularly near the settlements, so as to cause least disturbance to the local population, particularly women.
- Contractor will take due care of the local community and observe sanctity of local customs and traditions by his staff. Contractor will warn the staff strictly not to involve in any unethical activities and to obey the local norms and cultural restrictions.
- The contract will explore alternative water sources and ensure that water usage by the project does not affect or compete with water requirements of the local community.
- The Contractor will also ensure that noise and light pollution from the labor camp is kept at minimal levels especially at night.

- The bidders will be required to submit Codes of Conduct (CoCs) with their bids. The CoCs will set clear boundaries for acceptable and unacceptable behaviors of all individuals and companies and will be signed by companies, managers and individuals.

## 6.5. Potential Environmental and Social Impacts during Operations and Mitigation

This section describes the impacts of subprojects during operations/ post construction.

### 6.5.1. Electromagnetic Field Generated

There may be radiation impacts of EMF related to radars at various selected sites which will be proposed by the PMD at implementation stage. Radars usually operate at radio frequencies (RF) between 300 MHz and 15 GHz. They generate EMFs that are called RF fields. RF fields within this part of the electromagnetic spectrum are known to interact differently with human bodies.

RF fields above 10 GHz are absorbed at the skin surface, with very little of the energy penetrating into the underlying tissues. The basic dosimetric quantity for RF fields above 10 GHz is the intensity of the field measured as power density in watts per square metre (W/m2) or for weak fields in milliwatts per square metre ($mW/m^2$) or microwatts per square metre ($\mu W/m^2$).

However, studies have shown that weather radars operate at higher frequencies but generally have lower average and peak powers. Under normal conditions, if radar is installed at a higher elevation, they pose no hazard to the general public however impact on workers exposed is likely to be high.

***Mitigation Measures***

- Engineering controls for EMF include interlocks, electronic means to exclude the radar pointing within office complex in the tower building, and shielding.
- Administrative controls include audible and visible alarms, warning signs, and restriction of access through barriers, locked doors, or limiting access time to radar.
- Workers will use personal protective equipment to ensure compliance with exposure standards. Conductive suits, gloves, safety shoes and other types of personal protective equipment for RF fields are now commercially available. PPEs should be used with great care, since the attenuation properties of the material used to make this protective equipment can vary dramatically with frequency.
- RF safety glasses will be used near the radar operating area. Special care will be taken in buying the glasses since any metal may enhance local fields by acting as a receiving antenna.
- There are no exposure situations where members of the general public need to use protective equipment for RF fields from weather radars. An extensive program of measurement surveys, hazard communication, coupled with effective protective measures, is required around all radar installations for safety of workers.

### 6.5.2. Air Quality and Climate

The subprojects are likely to hire additional staff subsequently there will be an increase in number of vehicles entering the project area. This will lead to increased vehicular emissions. Similarly, in absence of solar panel backup generators may cause emissions. If no mitigation measures adopted, the impact is likely to be moderate.

Component 2 is designed to have a significant positive impact on climate during operations.

***Mitigation Measures***

- The project staff will be advised to car pool and use and local transport;
- Provision of pick and drop for staff to avoid additional load on air quality;
- Vehicles with excessive smoke emissions should not be allowed to enter the sub-project locations.

### 6.5.3. Surface/ Ground Water

The type of sub projects proposed are not likely to cause direct contamination of water bodies and groundwater, siltation of surface water resources and alterations in drainage pattern. The sewerage water from the existing buildings enters the city sewerage drains. The sewerage lead to the surface water Nullah and surface water drains that are heavily polluted. The sub-projects are not likely to impact ground water, however, the impact on surface water through sewerage is likely to be moderate.

***Mitigation Measures***

- Ensure sewage is directed into municipal drains leading to sewerage treatment Plant.
- Restoration and protection if monsoon led water channels at the sub-project sites

### 6.5.4. Solid Waste

There will be an increase in solid waste generation due to additional building maintenance and staff employed for the sub-projects. Sub-project sites are located in areas where solid waste collection is provided by the municipality. However, these systems have been known to be unreliable resulting in open dumping of waste in nearby channels and green areas.

***Mitigation Measures***

The mitigation measures include:

- Segregate solid waste at source with labeled dust bins for biodegradable, non-biodegradable and recyclable products;
- Disposal of biodegradable to the municipality for treatment;
- Clearance of reusable and recyclable waste to certified recycling companies.

### 6.5.5. Electricity/ Water /Natural Gas /Fuel Consumption

The estimated water consumption calculated by Water and Sanitation Authority (WASA) is 72 gallons per person per day. There will be an increase in electricity, water, natural gas and fuel consumption as the sub-projects likely to hire staff. In absence of solar panels, the electricity consumption will have high impact; if the proposed design recommendation for Solar panel is included then the building will be self-sustainable.

***Mitigation Measures***

- Water meters will be installed to assess the water consumption and water sensors at taps to avoid the wastage in case of leakages;
- Plumping system will be checked and maintained on monthly basis;
- The staff of PMD will be trained on water conservation;

### 6.5.6. Ecological Impacts (Flora and Fauna)

According to a review of the ecological effects of radiofrequency electromagnetic fields [56], RF-EMF had a significant effect on birds, insects, other vertebrates, other organisms and plants in 70% of the studies.

Ecological impacts of component 2 are positive as the project will conserve and develop forests and other renewable natural resources, increase forest lands productivity along with increase in rangeland/pastures productivity & other related services and functions.

## 6.6. Environmental and Social Monitoring and Management Plan

### 6.6.1. Mitigation and Monitoring of Environmental and Social Impacts

**Table 6.3** describes the implementation of mitigation measures for potential environmental and social impacts and their monitoring plan.

[56] S.Cucurachietal W.L.M.Tamis, M.G.Vijver, W.J.G.M.Peijnenburg, and G.R.de Snoo

## Table 6.3: Environmental and Social Mitigation Implementation and Monitoring Plan

| Phase | Implementation Plan | | | Monitoring Plan | | | |
|---|---|---|---|---|---|---|---|
| **Impacts** | **Environmental and Social Impacts** | **Proposed Mitigation Measures** | **Responsibility** | **Monitoring Parameter(s)** | **Frequency** | **Responsibility** | **Compliance Criteria** |
| **Design Phase** | | | | | | | |
| **Biodiversity and Natural Resources** | Component 1: The sub-project sites may require tree cutting for site clearing.<br><br>Component 2: Invasive or alien species may be introduced | 1. Incorporate technical design measures to minimize unnecessary removal of trees and vegetative cover;<br>2. Plan for compensatory planting of eight trees against each fallen tree of similar floral function;<br>3. Disallow introduction of invasive/ exotic species; and recommend native species for plantation.<br>4. Locations for AWS will be selected outside/at a reasonable distance from the environmentally sensitive areas and archeological/cultural and religious sites of importance.<br>5. Avoid use of pesticides for plant growth.<br>6. Rangelands should not be selected for afforestation activities.<br>7. Prohibit introduction of plant species that have high water requirement in water logged areas.<br>8. Selection of local species for afforestation/reforestation. Selection should also consider the habitat preference/requirements of the species.<br>9. Tree species selection should be based on the principle of applying different approaches to different land and different trees. Furthermore, the selection should not only have high biomass and high amount of fixed carbon, but also be suitable to conserve water and soil, break wind and fix sand.<br>10. Afforestation and biodiversity conservation activities should be conducted based on available research on the native environmental and ecological parameters to avoid any impacts. | IPs<br>Design Contractors/ Engineers | Construction designs and maps<br>Project plans<br>Tree count Compensatory Tree Plantation Plans<br>Tree Species | At the time of design preparation<br>At the time of design finalization | Environmental Safeguards Specialist – PIU, Contractor, Project Directors | Site specific ESMP |
| **Land Acquisition, Resettlement, Loss of Livelihoods** | Component 1: The sub-project sites may require land acquisition and removal of encroachments<br><br>Component 2: The sub-projects may cause restrictions in access to legally designated parks and protected areas, as well as restrictions in access to natural habitats/areas that are not legally potected | 1. If land acquisition/resettlement will be required or loss of livelihood will occur, impacts will be mitigated by preparing a RAP and/or Process Framework in accordance with the Resettlement Policy Framework (RPF), provided in this ESMF and WB OP 4.12. Details are provided in Chapter 8 on Resettlement Policy Framework.<br>2. Stakeholders, including the community that is affected directly by the project, will be regularly consulted and their inputs will be incorporated in the mitigation measures. | Social Safeguards Specialist– IPs | Site selection maps Preparation of RAP<br>Process Framework | At the time of design | Social Safeguards Specialists<br>Project Directors | RPF and WB OP 4.12 |

| Phase | Implementation Plan | | | Monitoring Plan | | | |
|---|---|---|---|---|---|---|---|
| **Impacts** | **Environmental and Social Impacts** | **Proposed Mitigation Measures** | **Responsibility** | **Monitoring Parameter(s)** | **Frequency** | **Responsibility** | **Compliance Criteria** |
| **Natural Disasters** | Component 1: The project sites are prone to natural disasters including earthquakes and floods.<br><br>Component 2: No construction activities are involved in this component which may have an impact due to natural disasters. | 1. The building design will be earthquake resistant according to Building Codes of Pakistan with Seismic provision and international best practices to avoid damage caused by earthquake;<br>2. The building design will include emergency exits and alarm system;<br>3. Planning, designing and constructing the building to minimize any potential flood damages using guidelines of Annexure 6. Following are proposed:<br>4. elevating as much of the building as possible above the design flood level,<br>5. designing the building foundation and any portions subject to flooding to withstand design flood conditions and loads,<br>6. using flood-damage-resistant materials for any portions of the building below the design flood level<br>7. where flood proofing is permitted, employing appropriate methods and materials to either dry-flood proof or wet-flood proof those portions of the building below the design flood level | Project Implementation Units (IPs) | Sub-project design maps with incorporation of building code for relevant Zones<br>Construction contractor ToRs | At the time of design | Environmental Safeguards Specialist – IP, Contractor, Project Directors | Building Codes of Pakistan with Seismic Provision using earthquake Zone standards for identified project sites |
| **Water /Electricity/ Natural Gas/ Fuel Consumption** | Component 1: There will be an increase in resource consumption due to construction work and subsequently project operations due to increase in staff.<br><br>Component 2: No such impacts are anticipated under this component | 1. Green building concepts and international best practice will be adopted for design provisions for water, electricity and natural gas conservation;<br>2. Water meters will be made part of the design in each building to monitor the consumption;<br>3. Design of buildings will include installation of Solar Panels;<br>4. Provision of Low Voltage electrical appliances will be made in procurement procedures;<br>5. Prepare energy and water conservation plan for construction | (IPs | Design provision for water, electricity, natural gas and fuel conservation | At the time of design | Environmental Safeguards Specialist – PIU, Contractor, Project Directors | Green Building Council guidelines |

| Phase | Implementation Plan | | | Monitoring Plan | | | |
|---|---|---|---|---|---|---|---|
| **Impacts** | **Environmental and Social Impacts** | **Proposed Mitigation Measures** | **Responsibility** | **Monitoring Parameter(s)** | **Frequency** | **Responsibility** | **Compliance Criteria** |
| **Universal Accessibility** | People with disabilities, parents with baby strollers, delivery workers, and others might need small provisions in the building design for easy access. However, accessibility issues are not confined to physical structure only. If not designed properly information technology products such as hardware, software etc. might cause accessibility issues for the intended users. | 1. The project design will incorporate the concept of universal accessibility Design so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability. | IPs<br>Design Contractors/ Engineers | Design provision for universal accessibility | At the time of design | Environmental Safeguards Specialist – PIU, Contractor, Project Directors | - |
| **Construction Phase** | | | | | | | |
| **Landscape/ Soil** | Component 1: Construction at sites is likely to carry out site clearance, vehicular, labour and machinery movement causing soil erosion and compaction. There is also a potential for contamination of soil via runoff from construction activities including oil spills, construction material, dredged / spoil materials and construction waste.<br><br>Component 2: Activities under this component may have significant impacts as a result of soil preparation causing damage to the top layer making it susceptible to erosion. | 1. Removal of vegetation and trees will be avoided to the extent possible<br>2. Water will be sprinkled during building of foundation to avoid erosion.<br>3. Construction materials will be stored in proper stores on impervious sheets to avoid any soil contamination.<br>4. Machinery and vehicles will be operated at designated routes to avoid erosion and compaction of un-impacted soils.<br>5. Visual Inspection will be carried out for land contamination and dust emissions.<br>6. The soil contaminated from minor and moderate spills will be removed and will be handed over to waste contractor for treatment at nearest incineration facility to the sub-project sites.<br>7. Optimum soil preparation time should be given which is usually a year before the plantation. In order to increase the survival rate of afforestation, planting should start from the spring or rainy season of the second year giving backfill soil enough time to age and replenish its water content. This optimum time will increase the survival rate and will decrease the impacts of soil erosion. | Contractor<br>IPs | Visual inspections and photographic record of site clearing and oil spills.<br>Visual inspection of site preparation and photographic evidence | Daily | Environmental Safeguards Specialist – IPs Construction Contractor | World Bank OHS for Ambient |

| Phase | Implementation Plan | | | Monitoring Plan | | | |
|---|---|---|---|---|---|---|---|
| **Impacts** | **Environmental and Social Impacts** | **Proposed Mitigation Measures** | **Responsibility** | **Monitoring Parameter(s)** | **Frequency** | **Responsibility** | **Compliance Criteria** |
| **Ambient Air Quality and Climate** | Component 1: The construction activities at sub-project sites will cause impact on air quality, cement mixers (Batch Plant), movement of the machinery, generators soil excavation, construction vehicles, is likely to generate dust and exhaust emissions. Impact on local air quality is high<br><br>Component 2: minor impacts on air and noise quality are anticipated. | 1. Follow NEQS as performance indicators;<br>2. Contractor shall provide an Emissions Monitoring Plan to ensure constant checking of emissions by construction machinery and vehicles; Contractor should provide an operations and maintenance plan for the same;<br>3. Water will be sprinkled twice a day to avoid fugitive dust emissions;<br>4. Unnecessary movement of vehicles will be avoided at the construction/planting location;<br>5. Open burning of solid waste from the Contractor's camps should be strictly banned;<br>6. Wind breaks /barriers (either natural or constructed) will be deployed to reduce the possibility of suspended particles in air;<br>7. Raw materials such as cement, gravels and sand will be kept under sheet covers to prevent air flow;<br>8. Necessary PPEs should be provided to prevent and mitigate the exposure to dust;<br>9. In order to further reduce the environmental impact, the concrete batching plant will incorporate the following design and practices:<br>10. Cement will be transferred directly from barges to the plant.<br>11. All mixing will be in the enclosed electric motor driven plant mixer, NOT in trucks.<br>12. Truck loaded with concrete will be in wet form.<br>13. All washing water used by the batch plant and storm water will be collected and stored and recycled for re-use.<br>14. No water will be discharged outside the plant boundary.<br>15. Concrete recycling machine be used to recycle waste material to slurry water and aggregates for reuse. | Contractor<br>IPs | Ambient Air Quality monitoring for SOx, NOx and Particulate Matter PM2.5/10 | Quarterly | Environmental Safeguards Specialist in IPs/ Construction Contractor | NEQS and World Bank OHS |
| **Surface/ Ground Water Resources** | Component 1: Construction activities may encourage soil erosion and waste may increase the sediment loads into the city drainage, while accidental leaks/spills of oil/fuel from storage tanks or maintenance vehicles can also pollute surface waters. | 1. Debris Management to be included in the Solid Waste Management Plan; the contractor will ensure that construction debris does not find its way into the drainage or water channels;<br>2. Prohibit washing of machinery and vehicles in surface waters, provide sealed washing basins and collect wastewater in sedimentation/retention pond;<br>3. Construction work close to streams or other water bodies will be avoided, especially during monsoon period;<br>4. All fuel storage will be properly marked to highlight their contents with a concrete pad underneath to prevent water contamination in case of leaks or spills. Daily monitoring will be carried out for leaks. Shovels, plastic bags, and absorbent material will be placed near fuel and oil storage or handling | Contractor<br>IPs | Water quality monitoring | Quarterly | Environmental Safeguards Specialist -IPs Construction Contractor | NEQS and World Bank OHS |

| Phase | Implementation Plan | | | Monitoring Plan | | | |
|---|---|---|---|---|---|---|---|
| **Impacts** | **Environmental and Social Impacts** | **Proposed Mitigation Measures** | **Responsibility** | **Monitoring Parameter(s)** | **Frequency** | **Responsibility** | **Compliance Criteria** |
| | Component 2: Specific activity that may harm the quality of surface and groundwater will be the application of pesticides. The runoff could result in the pollution of groundwater and surface water bodies. | areas to attend spills and leaks;<br>5. Used oil and vehicle related waste will be transported to local contractors for recycling or reuse;<br>6. Diverting work area runoff into properly designed and constructed sediment traps or drainage collection system to ensure that exposed soils are not eroded. Runoff velocities in ditches or other drainage routes, or along slopes, to be kept low to minimize erosion potential. Runoff outfall locations to be protected with erosion resistant material, if required.<br>7. Proper disposal of solid and sewage waste from workers camps to ensure it is not disposed in the drainage channel.<br>8. Excess soil should be covered to prevent run off due to rain. | | | | | |
| **Water /Electricity/ Natural Gas and Fuel Consumption** | Component 1: Construction activities require a large amount of water that may reduce the availability of water in residing area. It will add load to the electricity natural gas fuel consumption increasing GHG emissions. The impact is likely to be high.<br><br>Component 2: Labor camps will only be setup temporarily as project activities will be conducted at different sites | 1. Construction staff will be trained on water conservation practices to avoid excessive loss;<br>2. Water required for construction should be obtained in a way so that water availability and supply to residing area remains unaffected;<br>3. Approval will be attained from relevant departments prior to construction work.<br>4. Prepare **Energy and water conservation plan** for construction. | Contractor<br>IPs | Water, Electricity and Natural Gas Consumption<br>Energy Conservation Plan Trainings | Monthly/ Quarterly | Environmental Safeguards Specialist -IPs<br>Construction Contractor | World Bank Environmental Code of Practice |
| **Solid Waste Generation** | Component 1: During construction phase, solid waste can be generated from discarded equipment parts, scrap metals, equipment boxes, wood parts, empty bags, and leftover construction debris. The construction material and waste may include toxic/hazardous chemical materials.<br><br>Component 2: Only minor waste may be generated due to establishment of temporary labor camps. The scale of | 1. **Solid Waste Management Plan** will be prepared for all sub-project sites to be used by Construction Contractor. In case of the occurrence of toxic/hazardous chemical materials, it will be handled according to hazardous waste management best international practices. The Waste Management Plan will be prepared with following provision of hazardous chemical handling plan:<br>▪ Solid waste collection, segregation, storage and disposal will be carried out for waste generated. For at source segregation separate waste bins will be placed at sub-project sites. Recyclable material will be segregated whereas non-hazardous waste will be disposed-off properly at approved disposal site;<br>▪ Labeling of containers will be carried out including the identification and quantity of the contents, hazard information;<br>▪ Marking of Hazardous/toxic waste 'if generated' separately and disposal using international best practices through registered contractor;<br>2. Used oil will be collected in separate containers stored on | Contractor<br>IPs | Solid waste Management Plan trainings<br>Amount and type of solid waste generated from sub-project sites;<br>List of hazardous chemicals used for construction | Monthly | Environmental Safeguards Specialist -IPs<br>Construction Contractor | Hazardous Chemicals Rules, 2003 |

| Phase | Implementation Plan | | | Monitoring Plan | | | |
|---|---|---|---|---|---|---|---|
| **Impacts** | **Environmental and Social Impacts** | **Proposed Mitigation Measures** | **Responsibility** | **Monitoring Parameter(s)** | **Frequency** | **Responsibility** | **Compliance Criteria** |
| | impact is assessed to be negligible | impervious platform with restricted access and must be sold to licensed contractor;<br>3. Burning of solid and waste oil should be strictly prohibited<br>4. Training of workers will be carried out in the storage and handling of materials and chemicals that can potentially cause soil contamination;<br>5. **Emergency Response Plan** will be prepared to address the accidental spillage of fuels and hazardous/toxic material, fire, vandalism and natural hazards;<br>6. On completion of the construction phase of the project, the contractor will be required to rehabilitate the site. Rehabilitation will include removal of all construction materials and wastes, and the grading and landscaping of all exposed sites that may be prone to erosion. Where natural erosion protection measures may not be possible or practical, suitable physical erosion protection methods will be used. | | | | | |
| **Noise Levels** | Component 1: The construction activities are likely to generate high noise levels. The sources of noise in construction include Asphalt Plant excavation work, heavy earth moving equipment/ machinery, pilling work, welding, cuttings, drilling, grinding and material loading/offloading vehicles. Impact is likely to be high.<br><br>Component 2: Noise generated during implementation of this component will be just by the transport which will not exceed the limits under NEQs and international standards | 1. The location for stationary sources of noise such as concrete mixers and pumps will be selected at a reasonable distance from residing population. The cement tankers will be working inside enclosure with cladding to reduce noise;<br>2. The construction material loaders will only operate during night time as per rules of traffic police. Working hours will be allocated for the use of batch plant, equipment and other machinery;<br>3. School time and late night construction activities will be avoided;<br>4. Use of noise barriers in locations next to schools;<br>5. Blowing of horn will be strictly prohibited;<br>6. Noise monitoring will be carried out at various locations using noise meters. Site labour working in high noise area where noise level exceeds 85 dB (A), will wear earplugs and ear muffs;<br>7. Noise level of 55 dB at day and 45 dB at night time will be maintained.<br>8. Vehicle used of construction or planting activities will be regularly inspected to keep good condition. | Contractor<br>IPs | Noise Monitoring Residing Areas and<br>Construction Site | Monthly | Environmental Safeguards Specialist -IPs<br>Construction Contractor | NEQS, World Bank OHS |
| **Flora and Fauna** | Component 1: The construction may require cutting of trees and clearing of vegetation. | 1. Planting of eight trees for every tree cut during construction;<br>2. Do not introduce invasive or exotic species through plantation.<br>3. Mixed forest mode should be adopted to avoid single structure | Contractor<br>IPs | Tree count<br>Tree Plantation in designated area and | Prior /Start/Post construction | Environmental Safeguards Specialist -IPs | Site specific ESMP |

| Phase | Implementation Plan | | | Monitoring Plan | | | |
|---|---|---|---|---|---|---|---|
| **Impacts** | **Environmental and Social Impacts** | **Proposed Mitigation Measures** | **Responsibility** | **Monitoring Parameter(s)** | **Frequency** | **Responsibility** | **Compliance Criteria** |
| | Component 2: Could have significant impacts if unsuitable afforestation mode is selected, e.g. single species in large area will lead to single structure of forest. | of forest that could damage biodiversity.<br>4. Several tree species with several afforestation modes interval should be adopted in every project region.<br>5. Select local species for afforestation/reforestation considering the habitat requirement/preference. | | count eight for one cut.<br>Visual inspection and photographic evidence | | Construction Contractor | |
| **Public Health and Safety** | Component 1: Construction activities and movement of heavy vehicles may impact public safety. Similarly, emissions and noise from the site may impact the health of residing communities<br><br>Component 2: The impact on public could only be because of the transport vehicles' movement which is anticipated to be very low. | 1. Train drivers operating heavy vehicles in road and pedestrian safety;<br>2. Set appropriate speed limits to avoid accidents;<br>3. Use of heavy vehicles on public roads will be avoided during hours when students are coming to school or leaving school;<br>4. Placement of construction and diversion signage, particularly at urban areas and at sensitive/accident-prone spots, in accordance to a **Public Safety Plan**;<br>5. Provision of alternate routes for use by the public.<br>6. Preparation of traffic management plan in collaboration with the traffic police, especially where schools, hospitals or any other such facility exists near the project site.<br>7. Stakeholders, including the community that is affected directly by the project, will be regularly consulted and their inputs will be incorporated in the mitigation measures. | IPs | Complaint/<br>Accident Register | Prior /Start/Post construction | Social Safeguards Specialist -IPs<br>Construction Contractor | World Bank OHS Guidelines and ECP |
| **Workers Health and Safety** | Component 1: Use of heavy machinery and handling of hazardous waste and chemicals may result in health impacts for workers on the construction site.<br><br>Component 2: Working on steep slopes could pose a danger to the safety of workers | In accordance to the **Workers Health and Safety Plan**, ensure:<br>1. Onsite first aid kits will be kept at construction sites and randomly moving vehicles\machinery, and selected workers will be provided first aid training.<br>2. In case of an incident involving injury, the injured will be taken to the nearest medical facility after providing necessary first aid.<br>3. Provision of clean drinking water will be ensured for the construction crew;<br>4. Hygiene inspections will be carried out to avoid disease epidemic;<br>5. In case of unlikely incidents (fire, vandalism) the workers will be evacuated and emergency response and law enforcement agencies will be engaged;<br>6. Fire safety alarms will be installed at various locations;<br>7. Fire extinguishers will be placed at various locations including a water hose installation at ground level;<br>8. Fire safety and emergency response trainings will be conducted;<br>9. Hazards indicator signs and firefighting equipment will be installed;<br>10. The construction crew will be trained on important aspects of | Contractor<br>IPs | Health and Safety Management Plan and trainings<br>Medical record of workers Prior /Start/Post construction | weekly | Social Safeguards Specialist -IPs<br>Construction Contractor | World Bank OHS Guidelines and ECP, Health and Safety Management Plan |

| Phase | Implementation Plan | | | Monitoring Plan | | | |
|---|---|---|---|---|---|---|---|
| **Impacts** | **Environmental and Social Impacts** | **Proposed Mitigation Measures** | **Responsibility** | **Monitoring Parameter(s)** | **Frequency** | **Responsibility** | **Compliance Criteria** |
| | | workplace safety;<br>11. Construction machinery operators and drivers will be trained to avoid associated accidents using machines and vehicles;<br>12. Flammables and other toxic materials will be marked and stored at secured sites;<br>13. Do not allow workers with inadequate training to operate heavy machinery;<br>14. Provision of appropriate and high quality Personal Protective Equipment (PPE) to workers such as gloves, vests, hard-hats, masks etc.;<br>15. Train workers in the use of PPE and safety measures while using heavy machinery and handling chemicals.<br>16. Prohibit the use of Asbestos Containing Materials in the new buildings.<br>17. Follow guidelines for Asbestos and Asbestos based product use in case Asbestos Containing Materials are identified in the old building for rehabilitation/upgrade **(Annexure 7)** | | | | | |
| **Physical /Cultural/ Archeological Resources** | Component 1: The sub-projects may include religiously and culturally important sites at a reasonable distance. Excavation work during construction may result in the uncovering of ancient sites or artifacts. Impact is likely to be low as the only identified sensitive site close to sub project MMC is a grave yard.<br><br>Component 2: Impacts are likely to be negligible for this component as no excavation will be involved | 1. Construction staff will be trained and informed on identifying the evidence of archaeological/historic remains;<br>2. In case evidence of archaeological remains is found during construction activities, the actions listed below will be undertaken.<br>▪ Excavation work in the vicinity of the find will be stopped;<br>▪ Assistance will be sought from the nearest office of the Department of Archaeology and Museums to identify the remains;<br>▪ If the department decides to salvage the find, PMD will provide assistance.<br>3. Detailed procedure for Archaeological Chance Finds included in **Annexure 8**. | Contractor<br>IPs | Consultation with the relevant departments<br><br>Preparation of PCR Plan, if needed. | At the start of construction | Social Safeguards Specialist -IPs<br>Construction Contractor | RPF and WB OP 4.12 |
| **Traffic Management** | Component1: The sub-project sites are in urban area close to social sensitive receptors like schools, colleges, offices and residents. The construction work may likely impact the traffic flow.<br><br>Component 2: Use of transport vehicles will be very less and routes will change, hence impacts are assessed to be negligible | 1. Vehicles will be inspected prior to start of construction work.<br>2. Alternate routes will be created to avoid disturbance to school and hospital;<br>3. Construction site will be barricaded to minimize accidental injuries and visual nuisance to the general public;<br>4. Movement of construction equipment will be limited to specific duration when there is least disturbance to the residing offices e.g. after school timings;<br>5. Adequate road signs will be erected to warn general public;<br>6. The contractor will be advised to follow vehicular maintenance to reduce engine noise;<br>7. Drivers will be trained to follow the designated routes and avoid honking; | Contractor<br>IPs | Construction vehicles trimmings Accident register | Continuous | Social Safeguards Specialist -IPs<br>Construction Contractor | Compliance Traffic management plan |

| Phase | Implementation Plan | | | Monitoring Plan | | | |
|---|---|---|---|---|---|---|---|
| **Impacts** | **Environmental and Social Impacts** | **Proposed Mitigation Measures** | **Responsibility** | **Monitoring Parameter(s)** | **Frequency** | **Responsibility** | **Compliance Criteria** |
| | | 8. The construction trucks will be adequately covered with tarpaulin covers to avoid flow into air. | | | | | |
| **Labor Influx** | In some cases, even a modest labor influx already may lead to negative impacts on the host community. The induction of outside labor may create social and gender issues due to the labor force being unaware of local customs and norms. It may also cause hindrance to the mobility of local women for working in the field, herding livestock, picking fuel wood, etc. | 1. Local population will be given preference in construction related jobs. Most unskilled workers will be hired from local communities, while for skilled manpower also, first choice will be given to local area residents. The bidding documents will include specific requirements that minimize the use of expatriate workers and encourage hiring of local workers, thereby minimizing labor influx.<br>2. The Contractor will prepare the construction camp management plan which, in addition to other components, will include the labor influx management aspects.<br>3. The Contractor will select the specific timings for the construction activities particularly near the settlements, so as to cause least disturbance to the local population, particularly women.<br>4. Contractor will take due care of the local community and observe sanctity of local customs and traditions by his staff. Contractor will warn the staff strictly not to involve in any unethical activities and to obey the local norms and cultural restrictions.<br>5. The contract will explore alternative water sources and ensure that water usage by the project does not affect or compete with water requirements of the local community.<br>6. The Contractor will also ensure that noise and light pollution from the labor camp is kept at minimal levels especially at night.<br>7. The bidders will be required to submit Codes of Conduct (CoCs) with their bids. The CoCs will set clear boundaries for acceptable and unacceptable behaviors of all individuals and companies and will be signed by companies, managers and individuals. | Contractor<br>IPs | As per relevant ECOP | At the start of construction | Social Safeguards Specialist –IPs and NDRMF | As per relevant ECOP |
| **Indigenous People** | Some of the activities under component 2 might be implemented in the *Kalash* area. These activities may include afforestation, reforestation, regeneration of natural forest, soil conservation in hilly areas, protection of rangeland, | 1. A stand-alone IPPF has been prepared to assess and mitigate potential impacts on Indigenous Peoples. Sub-project specific Indigenous Peoples Plans will be developed for individual activities. | Implementation Partners | As per IPPF | As per IPPF | As per IPPF | As per IPPF |

| Phase | Implementation Plan | | | Monitoring Plan | | | |
|---|---|---|---|---|---|---|---|
| **Impacts** | **Environmental and Social Impacts** | **Proposed Mitigation Measures** | **Responsibility** | **Monitoring Parameter(s)** | **Frequency** | **Responsibility** | **Compliance Criteria** |
| | landscape restoration, habitat improvement and increasing connectivity between natural areas, conservation and management of protected areas and other natural habitats, promotion of community based conservation initiatives, awareness raising and monitoring. These will have overall positive impacts, however, individual sub-projects may cause temporary impacts cited above. Besides, there might be involuntary restrictions in access to protected areas and / or other natural habitats. | | | | | | |
| **Operations Phase** | | | | | | | |
| **EMF** | Component 1: The sub-project operations at MMC and WSR sites may have radiation impacts of EMF related to radars<br><br>Component 2: No impacts under this component | 1. Engineering controls for EMF include interlocks, electronic means to exclude the radar pointing within office complex in the tower building, and shielding.<br>2. Administrative controls include audible and visible alarms, warning signs, and restriction of access through barriers, locked doors, or limiting access time to radar.<br>3. Workers will use personal protective equipment to ensure compliance with exposure standards. Conductive suits, gloves, safety shoes and other types of personal protective equipment for RF fields are now commercially available. PPEs should be used with great care, since the attenuation properties of the material used to make this protective equipment can vary dramatically with frequency.<br>4. RF safety glasses will be used near the radar operating area. Special care will be taken in buying the glasses since any metal may enhance local fields by acting as a receiving antenna.<br>5. There are no exposure situations where members of the general public need to use protective equipment for RF fields from weather radars. An extensive program of measurement surveys, hazard communication, coupled with effective protective measures, is required around all radar installations for safety of workers. | IPs | Monitoring should be performed to quantify RF field levels in the area. While extremely high RF field levels can be measured directly in front of radar to assess the levels of EMF. | Quarterly | Environment and Social Safeguards Specialist -IPs | World Health Organisation Standards |
| **Air Quality and Climate** | Component 1: An increase in number of vehicles entering the offices may pose potentially negative impacts on the air quality of the area if not | 1. The project staff will be advised to car pool and use and local transport;<br>2. Provision of pick and drop for staff to avoid additional load on air quality; | IPs | Vehicular Emissions | Quarterly | Environment and Social Safeguards | NEQs Permissible limits of vehicular exhaust |

| Phase | Implementation Plan | | | Monitoring Plan | | | |
|---|---|---|---|---|---|---|---|
| **Impacts** | **Environmental and Social Impacts** | **Proposed Mitigation Measures** | **Responsibility** | **Monitoring Parameter(s)** | **Frequency** | **Responsibility** | **Compliance Criteria** |
| | mitigated properly<br><br>Component 2: The impacts on air quality and climate will be positive. | 3. Vehicles with excessive smoke emissions should not be allowed to enter the sub-project locations. | | | | Specialist -IPs | |
| **Surface and Ground water** | Component 1: The sub- projects are not likely to impact ground water, however, the impact on surface water through sewerage is likely to be moderate. | 1. Ensure sewage is directed into municipal drains leading to sewerage treatment Plant.<br>2. Restoration and protection if monsoon led water channels at the sub-project sites | IPs | Ground water /drinking quality | Biannual | Environment and Social Safeguards Specialist -IPs | NEQs liquid Effluent |
| **Solid Waste** | Component 1: There will be an increase in solid waste generation due to additional building maintenance and staff employed for the sub-projects.<br><br>Component 2: No waste will be generated during this phase | 1. Segregate solid waste at source with labeled dust bins for biodegradable, non- biodegradable and recyclable products;<br>2. Disposal of biodegradable to the municipality for treatment;<br>3. Clearance of reusable and recyclable waste to certified recycling companies. | IPs | | | Environment and Social Safeguards Specialist -IPs | Solid Waste Management Plan |
| **Electricity/ Water /Natural Gas /Fuel Consumption** | | 1. Water meters will be installed to assess the water consumption and water sensors at taps to avoid the wastage in case of leakages;<br>2. Plumping system will be checked and maintained on monthly basis;<br>3. The staff of PMD and PIUs will be trained on water conservation; | IPs | Electricity/ Water /Natural Gas /Fuel Consumption | Monthly | Environment and Social Safeguards Specialist -IPs | N/A |
| **Ecological Impact of component 2** | Ecological impacts of component 2 are positive as the project will conserve and develop forests and other renewable natural resources, increase forest lands productivity along with increase in rangeland/pastures productivity & other related services and functions. Subsequently, it will enhance the protective functions of watersheds for regulating their water regimes, retarding soil erosion and siltation of reservoirs. Moreover, it will promote the dwindling of local flora/tree species while also conserving and improving habitat of fauna. | | | | | | |

# Chapter 7. Environmental and Social Screening

## 7.1. Sub-Project Screening and Impact Assessment Process

NDRMF has its own well established Environmental and Social Management System (ESMS) which is aligned with the World Bank's safeguards policies and procedures for environment and social impact assessment and management of projects. Comparative analysis of NDRMF ESMS and WB safeguard policies depicts that fundamental guidelines and procedures are similar for project selection, screening, categorization and documentation. However, nomenclature of environmental and social assessment instruments is different for each category.

The step wise procedural flow for the screening and subsequent categorization of sub-projects as shown in **Figure 7.1**. SGU requires this rigorous screening system to assess whether the proposed sub-projects have adequately addressed environment, social and Indigenous Peoples safeguards. The screening needs to be done by the Environmental and Social Specialists of Implementation Partners and the result of the screening will be reviewed by SGU of NDRMF

Environment and Social Screening and Categorization mechanism and Checklists to be used for the project are provided as **Annexure 1**. These include Indigenous Peoples and Gender Mainstreaming Checklists. All projects/subprojects will be screened for impacts on physical cultural resources and necessary mitigation measures. An outline of Physical Cultural Resource Management Framework providing a roadmap for preparing a Management Plan for the protection of cultural property and chance discovery of archaeological artifacts, unrecorded graveyards and burial sites are outlined in **Annexure 5.**

The sub-projects are classified under one of the categories provided in **Table 7.1** below.

**Table 7.1: Safeguards Categorization of Proposals for NDRMF Support**

| Category | Environment & Social | Involuntary Resettlement | Indigenous Peoples |
|---|---|---|---|
| A-Significant (To be screened out) | Projects with significant adverse environmental and social impacts that are irreversible. These impacts may affect an area larger than the sites or facilities subject to physical works. | Projects where 200 or more persons will experience major impacts, i.e. (i) being physically displaced from housing, or (ii) losing 10% or more of their productive assets (income generating). | Projects that are expected to significantly affect the dignity, human rights, livelihood systems, or culture of Indigenous Peoples or affect the territories or natural or cultural resources that Indigenous Peoples own, use, occupy, or claim as an ancestral domain or asset. |
| B - Less Significant | Projects with potential adverse impacts that are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be more readily designed than for | Investments with involuntary resettlement impacts that are not deemed significant. | Investments that are likely to have limited impacts on Indigenous Peoples. |

| Category | Environment & Social | Involuntary Resettlement | Indigenous Peoples |
|---|---|---|---|
| | Category A investments. | | |
| C - Minimal or No Impact | Investments that have minimal or no adverse environmental and social impacts. | Investments with no involuntary resettlement impacts. | Investments that are not expected to have impacts on Indigenous Peoples. |

The details of the three types of environmental and social categorizations for the different sub-projects are as follows:

**Category 'A'**: For a proposal likelihood to be classified as category A for environment, involuntary resettlement, or indigenous people's impacts, NDRMF will not be allowed to finance the sub-project. **All such sub-projects will be screened out.**

**Category 'B':** For proposals classified as category B, NDRMF will communicate the applicable E&S requirements to Fund Implementing Partners (FIPs). The World Bank reviews safeguards categorization and related safeguard requirements. The FIPs will be required to prepare all necessary safeguard documents and present them to the Fund for review and clearance. The Category B projects will require an ESMP to be conducted to fulfill both the national and Fund's the applicable requirements.

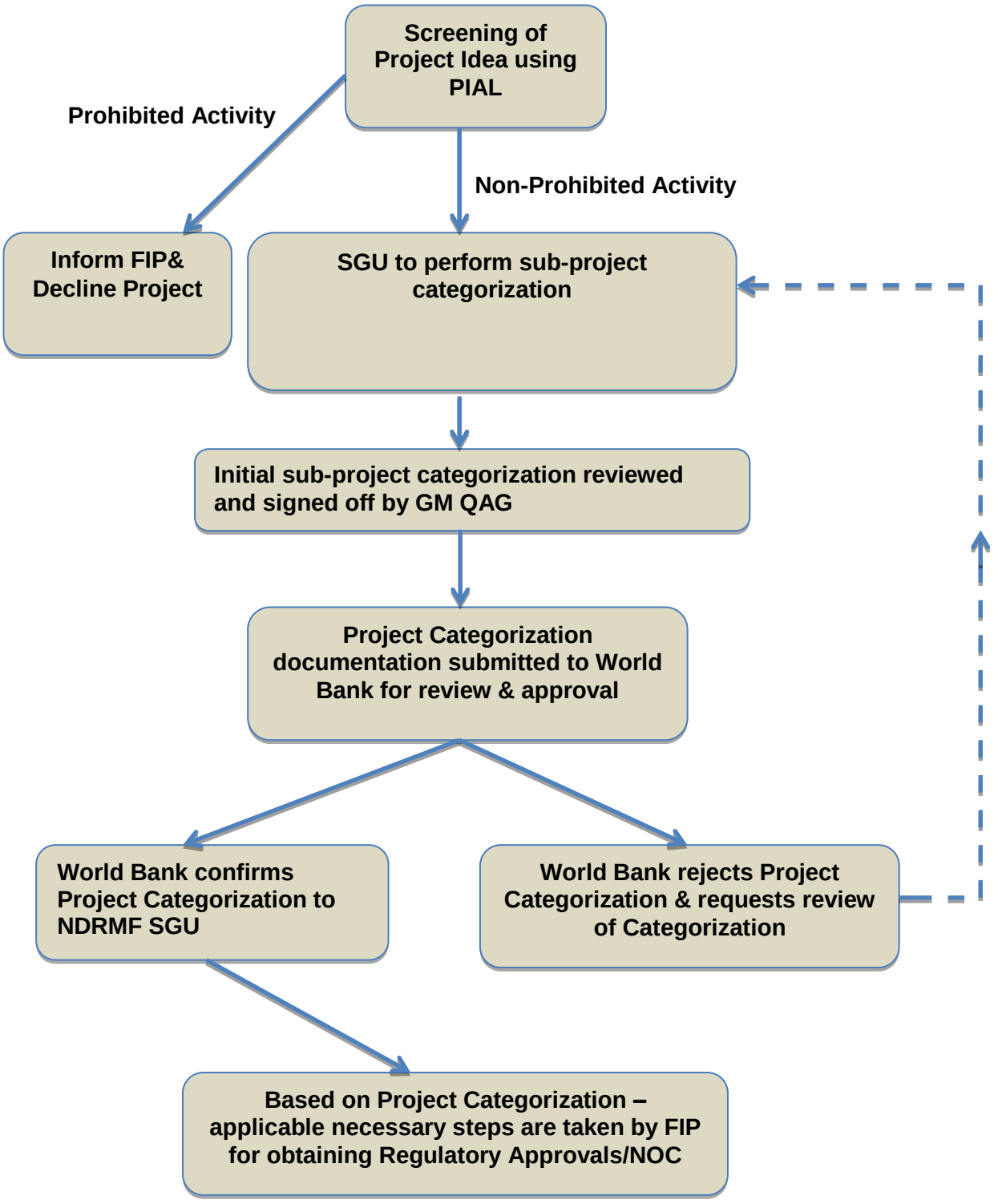
In the case of environmental safeguards, the fund implementing partner (FIP) will obtain environmental clearance from the relevant provincial Environmental Protection Agency. The FIP will be required to share the environmental no-objection certificate (NOC) with the Fund. The Fund will then communicate the approval to the World Bank as part of its regular reporting.

**Category 'C':** The sub-projects that may have minimal or no adverse environmental and social impacts and are listed under Schedule III of the EPA Review of IEE/EIA Regulations, 2014 will only require the completion of an environmental and social screening checklist, no further safeguard documents will be required.

The following will be applicable for all sub-projects:

- The Grant Implementation Agreement (GIA) between the Fund and implementing agency shall have relevant clauses to ensure ESMPs compliance through implementing partners and the Contractors.
- Through GIA implementing agency will be made responsible for mandatory Environment, Health and Safety Guidelines of the Fund's ESMS.
- Each subproject will be subject to biannual environmental and social safeguard audit as per the ESMS through third party.

**Figure 7.1: Procedure Flow – Project Screening and Categorization**




## 7.2. ESMP Preparation Guidelines

The guidelines for preparation of ESMPs are given below. The assessments will also be

submitted to the relevant EPA for obtaining NOC before commencing the sub-projects implementation, in line with the respective provincial regulatory requirements.

## ESMP Guidelines for Sub-Projects

When a subproject includes distinct mitigation measures (physical works or management activities), an Environmental & Social Management Plan (ESMP) needs to be prepared.

**Site Specific ESMP General Format/ Contents:**

An ESMP should be developed based on the result of E&S screening, i.e. the completed screening forms, and should in principle include the following components:

Description of sub-project activities: planned sub-project activities, location, stakeholders involved, schedule etc.

Description of adverse effects: The anticipated effects are identified and summarized.

Description of mitigation measures: Each measure is described with reference to the effect(s) it is intended to deal with. As needed, detailed plans, designs, equipment descriptions, and operating procedures are described. The relevant mitigation measures should be also selected from ESMF Chapter 6 and Annexure 2 Environmental Code of Practices.

Description of monitoring program: Monitoring provides information on the occurrence of environmental and social effects. It helps identify how well mitigation measures are working, and where better mitigation may be needed. The monitoring program should identify what information will be collected, how, where and how often. It should also indicate at what level of effect there will be a need for further mitigation. How environmental and social effects are monitored is discussed below.

Responsibilities: The people, groups, or organizations that will carry out the mitigation and monitoring activities are defined, as well as to whom they report and are responsible. There may be a need to train people to carry out these responsibilities, and to provide them with equipment and supplies.

Implementation schedule: The timing, frequency and duration of mitigation measures and monitoring are specified in an implementation schedule, and linked to the overall subproject schedule.

Capacity building and training: ESMP should recommends the establishment or expansion of environment & social units, and the training of staff, to allow proper implementation of ESMP

Cost estimates and sources of funds: This are specified for the initial subproject investment and for the mitigation and monitoring activities as a subproject is implemented. Funds to implement the EMP may come from the subproject grant, from the community, or both. Government agencies and NGOs may be able to assist with monitoring.

**Monitoring Methods:**

Methods for monitoring the implementation of mitigation measures and environmental effects should be as simple as possible, consistent with collecting useful information, so that community members can apply them themselves.

- 

## 7.3. Planning Review and Approval

NDRMF's implementing partner will be responsible for initial projects screening, categorization and preparation of any safeguards instrument required in line with this framework. The IP will submit the initial ESMPs documents to NDRMF SGU prior to approval of sub projects to maintain the quality control and consistency. SGU will review the ESMPs to ensure ESMF compliance and will share with WB for final review and approval.

Likewise, implementing agency will be responsible to maintain proper liaison with line departments and EPAs. Project implementing agency will seek and share NOCs of the projects prior to commencement of works on ground.

# Chapter 8. Resettlement Policy Framework

## 8.1. Involuntary Resettlement under the Project

Project activities in Component 1 may have some small scale land acquisition requirements. Involuntary resettlement is not likely under component 2. Furthermore, while designing sub-projects under component 2, the existing and traditional use of 'unoccupied' land, whether government or private, will be taken into account, especially when the sub-project involves activities near dwellings of indigenous people or any other vulnerable groups.

Planned and anticipated sub-projects and their land requirements are:

***Upgradation and refurbishment of PMD facilities and offices***

This sub-component will establish the Monsoon Monitoring Centre in Islamabad, as well as up gradation of Flood Forecasting Division (FFD) to National Flood Forecasting Center (NFFC) in Lahore. Both facilities will be built on the existing offices of PMD in Islamabad and Lahore, hence not requiring any acquisition of land.

***Installation of Automatic Weather Stations (AWS)***

Locations for installing Automatic Weather Stations across Pakistan are not yet identified. Land requirements for each station are small, approximately 500 square feet. These stations will be installed on:

- Government owned land where possible
- If government owned land is not available, the project will explore voluntary land donations
- If government owned or voluntary land is not available, the project will as a last option, consider acquisition of private land. In case of land acquisition, an Abbreviated Resettlement Action Plan (RAP) will be prepared.

### 8.1.1. Resettlement Impact Categorization

In terms of scope, OP 4.12 states that the policy covers direct economic and social impacts that result from projects requiring the involuntary taking of land resulting in (a) relocation or loss of shelter; (b) loss of assets or access to assets; (c) loss of income sources or means of livelihood, whether or not the affected persons must move to another location; and (d) involuntary restriction of access to legally designated parks and protected areas, resulting in adverse impacts on the livelihoods of the displaced persons.

OP 4.12 also introduces the concept of associated resettlement impacts caused by non-Bank-funded activities that are linked to Bank-assisted projects. These "linkage" provisions apply when in the judgment of the Bank, regardless of the source of funding, activities resulting in involuntary resettlement are: (a) directly and significantly related to the Bank-assisted project; (b) are necessary to achieve the objectives of the Bank project; and (c) are carried out, or planned to be carried out, contemporaneously with the Bank project. In terms of

policy instruments, OP 4.12 introduces further precision regarding the typology and the content of the instruments required to implement the resettlement policy.

A distinction is made between three types of instruments:

(1) A Resettlement Policy Framework is prepared during project preparation when the requirements for land acquisition or displacement are not known, such as in sector investment or financial intermediation projects.
(2) A Process Framework is prepared for projects involving involuntary restriction of access to legally designated parks and protected areas.
(3) A due diligence report will be prepared when no negative impact is screened out during project planning stage.
(4) A Resettlement Plan is prepared during project preparation when the affected area and population is known.
(5) An Abbreviated Resettlement Plan is prepared if impacts are minor or fewer than 200 people are displaced.

As mentioned at the beginning of this chapter, the physical infrastructure under Component 1 will be built only on Government owned lands. For Component 2, afforestation activities will target the degraded lands. In case land acquisition requirement is ascertained, it will be obtained using Voluntary Land Donation (VLD) mechanism.

## 8.2. Voluntary Land Donation

The ESMF principles in respect of land acquisition and resettlement is to (i) avoid involuntary land acquisition and resettlement impacts; and (ii) minimize land requirements and if needed, to use when possible, government land or obtain other land through voluntary means or negotiated agreements.

For afforestation and reforestation community participation is must. Forest department will sign MoUs with different communities and plant trees on the range or mountain lands through public private partnership mode. In many part of the country community forest are classified in following five categories:

1. **Reserved Forest:** Declared protected, owned by government and cannot be cut.
2. **Protected Forests:** Declared protected as indigenous forests, but still communities have rights from 60% to 80%.
3. **Guzara Forest:** Owned by individual or joint families, and people grow it for their livelihood and domestic use.
4. **Mazroa Forest:** These are private forest and cultivated by farmers on their agriculture lands and homesteads.
5. **Tribal Forest:** Owned by different tribes and cultivated on communal lands.

### 8.2.1. Community Forestation Programme

Forest departments will give sampling to the communities for cultivation on their lands. In other cases, plantation in protected forests, reserve forests, guzara forests, mazroa forest and tribal forest will be carried out with through community participation. MoUs for land use and to plant forests on private lands i.e individual, joint or communal lands will be signed with the owners.

### 8.2.2. Need for Voluntary Land Donation

Sub projects involving disaster related, community driven, small scale schemes could be taken up using state land where available. However, in cases where state land is either not available or not suitable, land may be acquired through voluntary land donation, mostly by the beneficiary community collectively or through individuals.

Many communities or tribes have expressed their willingness to provide voluntarily a part of their communal land for project activities. Landowner communities/groups are willing to provide their land in consideration of benefits of project to their community members and the fact that landownership will still remain with them.

Demands for such subproject must arise from the beneficiary communities. The community must submit applications for execution of the sub project and clearly mention in the application that the community will voluntarily donate any necessary small parcels of land for the project.

A land assessment screening report will be prepared and submitted to WB for clearance before start-up of civil works involving use of non-state land. The assessment report will document the process and outcome achieved for respective interventions according to its requirements and appropriate land arrangement.

The project will monitor implementation of land aspects, submit semi-annual reports to WB and address any unforeseen impacts that may occur during implementation in line with the framework.

### 8.2.3. Due Diligence

The voluntary land donation due diligence will be documented at project feasibility assessment report and will incorporate at a minimum the following:

- Documented verification that land required for the project is given voluntarily and it is free from any dispute on ownership or any other encumbrances.
- Verification that no individual household will be impoverished by the land donation (i.e., no more than 10% of total agricultural land holding donated)
- Community development groups negotiate livelihood restitution measures such as reduction in operation and maintenance fees or sharing of cultivable land of other beneficiary community members.
- In case of barren land or culturable waste or land underwater or in river bed, an individual may donate land more than 10% of his/her land holding.
- Verification that land donation will not displace tenants or bonded labor, if any, from the land
- Verification that land donated is not land used by indigenous peoples either traditionally or customarily
- Meaningful consultation has been conducted in good faith with all potential land donors, with local administration offices (e.g. Revenue, Agriculture, Forest or District Administration, etc.) about any ongoing disputes or litigation, and with local residents to assess if the proposed works will adversely affect any person(s) or communities.
- Documented verification that land donors are in agreement with the scheme and scheme benefits. Separate discussions to be held with women and minority groups as required to facilitate meaningful participation; and
- Assurance that a community mechanism for scheme implementation is operational and has a fair system of grievance redress, as well as a system for project monitoring and reporting.

- Validate that any minor impacts have been identified, sufficiently addressed and documented by the Project.
- Validate that the land donation agreement is in compliance with safeguard requirements stipulated in this framework. Proposed site should be free of any private residential structures or major sources of livelihoods.
- Particular attention will be paid to women, women-headed households, elderly and other vulnerable people. It will be ensured that no adverse negative impact occur to them.

In case of project activities being implemented in or around the areas of the *Kalash*, the due diligence will be according to the IPPF prepared for the project, in addition to all the above mentioned considerations. It will include confirmation that the activities are aligned with the current land use patterns, and that any potential restriction in access of the IPs to the natural resources has been duly and sufficiently mitigated.

### 8.2.4. Voluntary Land-Use Agreement

For interventions where local landowner communities are willing to provide voluntarily part of their communal or private land for project activities, in consideration of benefits of the Project to their community members, the land (user right) will be obtained through a voluntary land use agreement for construction or other activities. An agreement will be carried out with every individual owner in case of private land and with the tribal head committee in case of communal or tribal land. An agreement for VLD on Judicial Stamp paper of nominal minimal legal value will be obtained from every land owner.

### 8.2.5. Process Flow for Land Use through VLD

i. On the request of community and for the benefit of the respective individual or community, such land will be obtained through voluntary land use agreement or negotiated purchase. It will be ensured that the failure of the negotiation for VLD will not result in compulsory acquisition.
ii. Community should apply to the concern department with a demand for execution of the proposed project.
iii. The Project will organize a public consultation meeting in the respective sites to verify the information. The project team will prepare minutes of the meetings, which will be kept in the project office and their copies will be attached to the land assessment/screening report.
iv. Local communities/landowners/PAPs will be consulted meaningfully on the purpose of the Project, the selection of sites and options to avoid or minimize impacts. Terms and conditions of voluntary land use agreement will be discussed. It will be ensured that it is, in fact, voluntary and no one will be forced to provide their land or assets.
v. Preparation of a location map identifying the proposed land and it's RoW.
vi. Coordination with the Revenue Department for verification of the land ownership record.
vii. An agreement for VLD on Judicial Stamp paper of nominal minimal legal value will be obtained from every land owner.
viii. Validate that the landowner representatives signing the agreement duly represent the landowners.

### 8.2.6. Monitoring of Voluntary Land Donation

The voluntary land donation issues will be monitored by NDRMF Social safeguards and M&E team. WB social safeguards team or team appointed for annual audit of ESMS may

also monitor and check the records of VLD documents. These monitoring bodies will also thoroughly review the land donation agreement forms and randomly interview the land donors. During review missions, WB will verify that land donation due diligence has been conducted in accordance with the above procedures.

#### 8.2.7. Grievance Redress Mechanism

Anticipated grievances may relate to coercion for land donation or donation of more than 10% of one's agricultural land holding, leading to impoverishment.

Project Director shall appoint a person to accept complaints of Project affected persons (PAPs). The PAPs will register their grievances with either GRM at site. The appointed person at the site office will document the complaint regarding VLD in "grievance register".

### 8.3. Abbreviated Resettlement Action Plan

As described above, the land acquisition requirements for the project will be handled as per the following hierarchy:

1. For most of the project activities, no land will be required.
2. In few cases where land is required, e.g. for AWS installation or PMD office upgradation, government land will be utilized.
3. If land is required for any activity in an area where government land is either not available or not suitable, the project will rely on voluntary land donation.
4. In very rare cases, the situation might arise where none of the above three options are available, and land acquisition or resettlement is required to a limited extent. In such cases, small parcels of land may need to be acquired from private parties.

If the situation demands option 4 above, it is envisaged that the land requirement will be very minimal. As such, much fewer than 200 people will be displaced, and the impacts on the entire displaced population will be are minor. As per WB OP 4.12, an abbreviated resettlement plan will be prepared in such cases, covering the following elements:

(a) A census survey of displaced persons and valuation of assets;

(b) Description of compensation and other resettlement assistance to be provided;

(c) Consultations with displaced people about acceptable alternatives;

(d) Institutional responsibility for implementation and procedures for grievance redress;

(e) Arrangements for monitoring and implementation; and

(f) A timetable and budget.

#### 8.3.1. Eligibility and Cut-off-Date

In accordance with the World Bank OP 4.12, census will be required to identify the persons who will be affected by the project to determine the eligibility for compensation and other resettlement assistance.

The compensation eligibility will be limited by a 'cut-off date' for the proposed project on the day of the start of the "census" survey for the impact assessment in order to avoid an influx of outsiders. The cut-off date will be announced through mass media (like pamphlets/leaflets, newspaper).

### 8.3.2. Compensation Entitlement Matrix

The compensation and resettlement & rehabilitation entitlements are summarized in the Entitlement Matrix presented as **Table 8.1** below:

**Table 8.1: Entitlement Matrix**

| Asset | Specification | Project Affected Persons | Compensation Entitlements[57] |
|---|---|---|---|
| Temporary impacts on arable land | Access is not restricted and existing or current land use will remain unchanged | Farmers/ Titleholders | No compensation for land acquisition provided that the land is rehabilitated/restored to its former quality following completion of works;<br>Rental for land will be provided in cash based on the use of land and in accordance with market value. |
| | | Leaseholders *(registered or not)* | No compensation for land provided that the land is rehabilitated/restored to its former quality following completion of works;<br>Land rental will be provided in accordance with market value. |
| | | Sharecroppers *(registered or not)* | Land rental will be provided in accordance with market value. |
| Permanent impacts on Arable land where access is restricted and/or land use will be affected | All adverse effects on land use independent of severity of impact | Farmers/ Titleholders | Land for land compensation with plots of equal value and productivity to the plots lost; or;<br>Cash compensation plus 15% CAS for affected land at replacement cost based on market value free of taxes, registration, and transfer costs. |
| | | Leaseholders *(registered or not)* | Renewal of lease contract in other plots of equal value/productivity of plots lost or<br>Cash equivalent to market value of gross yield of affected land for the remaining lease years (up to a maximum of 3 years). |
| | | Sharecroppers *(registered or not)* | Cash equivalent to market value of the lost harvest share once (temporary impact) or twice (permanent impact). |
| | | Agricultural workers losing their contract | Cash indemnity corresponding to their salary (including portions in kind) for the remaining part of the agricultural year. |
| | | Squatters | 1 rehabilitation allowance equal to market value of 1 gross harvest (in addition to crop compensation) for land use loss. |
| | | Tenants/Lessee | 1 rehabilitation allowance equal to market value of 1 gross harvest (in addition to crop compensation) for land use loss. |

[57] Compensation for all assets will be to the owner of the asset.

| Asset | Specification | Project Affected Persons | Compensation Entitlements[57] |
|---|---|---|---|
| Residential/ Commercial Land | | Titleholders | Land for land compensation through provision of a plots comparable in value/ location to plot lost or<br>Cash compensation plus 15% CAS for affected land at full replacement cost free of taxes, registration, and transfer costs. |
| | | Renters/ Leaseholders | 3 months rent or a value proportionate to the duration of the remaining lease, including any deposits they may lose. |
| | | Squatters | Accommodation in available alternate land/ or a self-relocation allowance |
| Houses/ Structures | | All relevant PAPs (including squatters) | Cash compensation plus 10% electrification allowance at replacement rates for affected structure and other fixed assets free of salvageable materials, depreciation and transaction costs.<br>Affected tenants will receive cash compensation of a value proportionate to the duration of the remaining lease period, or three months, whichever is higher.<br>In case of partial permanent impacts full cash assistance to restore remaining structure, in addition to compensation at replacement cost for the affected part of the structure. |
| | Encroachers | All Affected HHs | Cash compensation plus 10% electrification allowance at replacement rates for affected structure and other fixed assets free of salvageable materials, depreciation and transaction costs.<br>Affected encroachers will receive cash compensation for three month rental value on the basis of market rental rates<br>In case of partial permanent impacts full cash assistance to restore remaining structure, in addition to compensation at replacement cost for the affected part of the structure. |
| Crops | Crops affected | All PAPs owning crops (including squatters) | All crop losses will be compensated at market rates based on actual losses. |
| Trees | Trees affected | All PAPs owning trees (including squatters) | For timber/ wood trees, the compensation will be at market value of tree's wood content.<br>Fruit trees: Cash compensation based on lost production for the entire period needed to re-establish a tree of equal productivity. |
| Business/ Employment | Temporary or permanent loss of business or employment | All PAPs (including squatters, agriculture workers) | Business owner: (i) Cash compensation equal to one year income, if loss is permanent; ii) In case of temporary loss, cash compensation equal to the period of the interruption of business up to a maximum of six months or covering the period of income loss based on construction activity. |

| Asset | Specification | Project Affected Persons | Compensation Entitlements[57] |
|---|---|---|---|
| | | | Workers/ employees: Indemnity for lost wages for the period of business interruption up to a maximum of 3 months |
| Relocation | Transport and transitional livelihood costs | All PAPs affected by relocation | Provision of sufficient allowance to cover transport expenses and livelihood expenses for one month |
| Community assets | Mosques, foot bridges, roads, | Affected community | Rehabilitation/substitution of affected structures/ utilities (i.e. mosques, footbridges, roads). |
| Vulnerable PAPs livelihood | Households' below poverty line, female headed households, disable persons etc. | All vulnerable PAPs | Lump sum one time livelihood assistance allowance on account of livelihood restoration support. OPL should be per household member Or Minimum Wage per earning member per month.<br>Temporary or permanent employment during construction or operation, where ever feasible. |
| Unidentified Losses | Unanticipated impacts | All PAPs | Deal appropriately during project implementation according to the World Bank Operational Policies. |

### 8.3.3. Public Consultation and Participation

Public consultation and participation will afford the PAPs an opportunity to contribute to both the design and implementation of the program activities. In so doing, the likelihood for conflicts between and among the affected and with the management committees will be reduced.

In recognition of this, particular attention will be paid to public consultation with PAPs, households, homesteads (including host communities) as well as NGOs when resettlement and compensation concerns are involved. During RAP preparation, there must be adequate consultation and involvement of the local communities and the affected persons. Specifically, the affected persons must be informed about the intentions to use the earmarked sites for the project activities, facilities and structures. The affected persons must be made aware of:

- Their options and rights pertaining to resettlement and compensation;
- Specific technically and economically feasible options and alternatives for resettlement sites;
- Process of, and proposed dates for, resettlement and compensation;
- Effective compensation rates at full replacement cost for loss of assets and services; and
- Proposed measures to maintain or improve their living standards.

As a matter of strategy, public consultation will be an on-going activity taking place throughout the entire project cycle. Hence, public consultation will take place during the:

- Preparation of project designs
- Resettlement and compensation planning
- Drafting and reading/signing of the compensation contracts.

- Payment of compensations
- Resettlement activities

Public consultation and participation shall take place through local meetings, request for written proposals/comments, completion of questionnaires/application forms, public readings and explanations of the project interventions and requirements. Public documents shall be made available in appropriate languages at the local levels. RAPs will be translated to local languages and made freely available at a public place accessible to the PAPs to which it is relevant. Public consultation measures shall take into account the low literacy levels prevalent in the rural communities, by allowing enough time for discussions, consultations, questions, and feedback.

#### 8.3.4. Implementation Arrangements

For effective implementation, RAP will describe the implementation arrangements. Identification of critical path actions, preparation of RAP implementation arrangements, compensation procedures and resettlement process will be described for an efficient and smooth implementation of RAP.

#### 8.3.5. Grievance Redressal Mechanism (GRM)

Under the GRM, RAP will describe the options available to affected persons for grievance redressal they may have about the entire process, the identification of eligible people for compensation, the valuation and compensation and any other complaints they may have against the entire process.

#### 8.3.6. Preparation of Monitoring, Evaluation and Reporting Plan

The mitigation measures are effective only if properly monitored. For this purpose, proper Monitoring, Evaluation and Reporting plan will be prepared.

#### 8.3.7. Cost Estimates

RAP preparation and implementation costs, including cost of compensation, various eligible allowances, monitoring & evaluation, grievances redress and LAR administration, as well as contingencies, will be estimated and included in the RAP and will be considered an integral part of Project cost. RAP(s) will include a budget section indicating (i) unit compensation rates for all affected items and allowances, (ii) methodology followed for the computation of unit compensation rates, and (iii) a cost table for all compensation expenses including administrative costs and contingencies.

### 8.4. Process Framework

Component 2 might involve sub-projects where involuntary restriction of access, either temporary or permanent, to legally designated parks and protected areas might happen. This could result in adverse impacts on the livelihoods of the displaced persons. In such cases, the nature of restrictions, as well as the type of measures necessary to mitigate adverse impacts, will be determined with the participation of the displaced persons during the design and implementation of the sub-project. In such cases, the implementation partner will prepare a process framework, describing the participatory process by which:

a. Specific components of the project will be prepared and implemented;

b. The criteria for eligibility of displaced persons will be determined;
c. Measures to assist the displaced persons in their efforts to improve their livelihoods, or at least to restore them, in real terms, while maintaining the sustainability of the park or protected area, will be identified; and
d. Potential conflicts involving displaced persons will be resolved.

The process framework also will also describe the arrangements for implementing and monitoring the process.

It is to be noted that in cases of restriction in access to areas not designated as protected, OP 4.12 does not explicitly require Process Framework. In such cases, ARAP/RAP will be prepared, to mitigate impacts on livelihoods, as per guidance provided in the RPF..

The implementing partner / NDRMF will submit a draft process framework to the World Bank. The draft will conform to the relevant provisions of OP 4.12 as a condition of appraisal. In addition, during project implementation and before enforcing the restriction, the implementation partner will prepare a plan of action, describing the specific measures to be undertaken to assist the displaced persons and the arrangements for their implementation. The plan of action could take the form of a natural resources management plan for the project.

# Chapter 9. Institutional Arrangements

This section defines the organizational roles and responsibilities of the key players in the proposed project and grievance redress mechanism.

## 9.1. Project and ESMF Implementation

The activities and investments under the Project will be funded National Disaster Risk Management Fund (NDRMF) from the World Bank. The project envisages the use of existing government structures for implementation. Component 1 focusing on hydro meteorological and climate services will be implemented by the Pakistan Meteorological Department, while Component 2 will be implemented through federal and provincial government line departments such as forest and wildlife as well as NGOs and startups. implementing These Implementing Partners (IPs) would establish dedicated team for sub-project implementation.. IPs will be responsible for appointing a director of a sub-project and hiring of key staff and consultants for respective sub-project as per project requirements.

The IPs would have responsibility for project implementation including, but not limited to, stakeholder consultations, reporting, monitoring and evaluation, social and environmental management, procurement, financial management, audit and disbursements, as well as coordination with the line agencies and the Bank. The implantation team of a sub-project will be adequately resourced with skillsets and competencies required for project implementation and monitoring. The implementation of Component 1 will require close coordination between different government stakeholder agencies as well as within IA. To ensure overall guidance and coordination for project implementation, a dedicated Project Coordination Committee (PCC), comprising senior representatives from concerned federal and provincial departments, would be established as the apex forum.

The ESMF will be implemented by IPs, and will be supported by one environmental and social specialists/ officers at each IPs. Safeguard Unit of NDRMF will have the responsibility to supervise and monitor the ESMF compliance of each sub-project. Forestry/Biodiversity Specialists to be employed by NDRMF will also provide the necessary support for ESMF supervision/monitoring by SGU. The design engineer will also have staffed with environmental engineer to ensure the engineering design will integrate the appropriate environmental and social policies and provisions describe in ESMF in each sub-project design at implementation level. Similarly, the Contractor when undertaking the constructional activities will be supported by environmental and social technical staff to implement the ESMF and ESMPs.

## 9.2. Implementing Partners

Key public-sector partner institutions would act as implementing partners for Component 1, including the Aviation Division, WAPDA/Ministry of Water and Power, Provincial Irrigation Departments (PIDs), and the Provincial Agriculture Departments (PADs). For Component 2 federal and provincial forest and wildlife departments would be the core Implementing

Partners in addition to NGOs and startups. This joint-implementation arrangement will enable stakeholders to closely oversee improvements of products and services funded by the project within their respective sectors. To facilitate this objective, a Joint Technical Stakeholder Group (JTSG) has already been established during project preparation; this consists of both implementation partners and other stakeholders who will benefit from improved hydromel services. The project will be implemented according to the guidelines and procedures outlined in the Operations Manual (OM), which should be reviewed periodically.

The Project will support the Implementing Partners in developing and implementing an internal and external communications strategy during project implementation. The communication functions for the project will be housed at PMD and NDRMF.

## 9.3. ESMMP Institutional Arrangement

ESMMP will be implemented under the overall supervision of the Project Directors, of IPs. The designated sub-project directors (PD) will be the overall in-charge of the sub-project. They will engage, hire and delegate the supervisory responsibilities to the staff. The Project Directors will be responsible for the implementation, monitoring and reporting of the ESMMP through the Environment and Social Safeguards Specialists to be appointed by the sub-projects. The Social Safeguards Specialist of IPs will ensure implementation of the Resettlement Policy Framework and other social safeguards related measures defined in ESMMP along with implementation of Grievance Redress Mechanism (GRM) provided in following section.

The role of NDRMF would be to provide technical advisory and ensure ESMMP compliance through its environmental and social safeguard unit (SGU) and report the status to the World Bank. SGU is staffed with Environmental Specialists, Social Specialists and Gender Specialists.

### 9.3.1. Roles and Responsibilities of Implementing Partners

Roles and responsibilities of the designated Specialists in IPs have been detailed in **Table 9.1** below. In cases of overlapping roles by more than one Specialist, the higher officer will have the authority to re-designate the roles and responsibilities of those officers in the best interest of the project and to ensure clarity of responsibilities for EMP implementation.

**Table 9.1: Roles and Responsibilities of IPs**

| Position | Responsibility |
|---|---|
| Project Director | Ensure ESMMP implementation and regular consultations |
| Environment Safeguards Specialist | ▪ Ensure implementation of the ESMMP during various stages of design and construction;<br>▪ Screen sub-projects for environment impacts<br>▪ Ensure that timely and robust environmental monitoring is carried out in the field;<br>▪ Ensure that the construction contracts include clauses for ESMMP implementation;<br>▪ Ensure that environmental trainings are planned and |

| Position | Responsibility |
|---|---|
| | implemented;<br>▪ Overall monitoring and reporting of ESMMP;<br>▪ Conduct financial management of the ESMMP;<br>▪ Coordinate and ensure development of awareness material;<br>▪ Commission annual third party validations of the project;<br>▪ Prepare Environmental Bi-Annual Progress Reports for the project.<br>▪ Hold public / stakeholder consultations as per defined intervals |
| Social Safeguards Specialist | ▪ To carry out the screening of the sub-projects with respect to the social aspects as defined in the ESMF;<br>▪ Monitor and check the proper implementation of all social mitigation measures as suggested in ESMF/ESMP;<br>▪ Monitoring and evaluation of social related matters of the project and maintain a social complaint register to document social issues;<br>▪ Top supervise the Contractor's activities and make sure that all the contractual obligations related to the social compliance are met;<br>▪ Review of periodic social reports being prepared by the contractor<br>▪ Ensure inclusion of ESMMP guidelines in project designs.<br>▪ Screen sub-projects for social impacts, involuntary resettlement, and gender focus<br>▪ Ensure Resettlement Policy Framework (RPF) is implemented and RAP is prepared if required<br>▪ Remain the focal point for managing the project GRM, and maintain analysis and reports on types of complaints received, resolved, time taken to action, etc.<br>▪ Hold public / stakeholder consultations as per defined intervals<br>▪ Ensure Indigenous People Planning Framework (IPPF) is implemented and sub-project specific IP Plans are prepared if required |
| Environment and Social Safeguard officer / Database/MIS Specialist | ▪ Ensure that ESMMP, RAP and IPPP are being implemented by contractors at the site level;<br>▪ Monitor implementation of ESMMP through regular site visits and report to IP;<br>▪ To facilitate the implementation of the GRM;<br>▪ To receive and record complaints and issue acknowledgment;<br>▪ To maintain the record of all grievances and their status;<br>▪ Maintain a record of all documentation produced;<br>▪ Responsible for Grievance Redress at each site. |
| Forestry/Wildlife Specialists | ▪ Provide the input on the sub-project activities to environmental and social specialists.<br>▪ Discuss with environmental and social risks associated with afforestation/ecosystem restoration works to provide input to environmental and social screening.<br>▪ Ensure the implementation of the ESMP for forestry related activities. |

Sample TORs for Environmental and Social Specialists at IPs are given in **Annexure 8.**

### 9.3.2. Roles and Responsibilities of Design Engineers

In case of civil works in any subprojects under Component 1, the design engineers for each sub-project will be required to ensure integration of ESMF/ESMP requirements in all civil and engineering designs. They will also be involved in the preparation of EOIs for contractors and ensure that ESMF/ESMP requirements are integrated in EOI and BOQ documents.

While in case of Component 2 the implementing agency's technical staff/engineers will ensure the ESMF/ESMP compliance at each working site and the ESMMP scope of work shall be made part of the contract when contractors are mobilized. The most appropriate mechanism for this would be the inclusion of safeguard compliance clauses in the contract agreement between the IA and contractor.

### 9.3.3. Roles and Responsibilities of Contractors

Contractors for each sub-project will be required to prepare all relevant plans for mitigating environmental and social impacts and ensure that ESMF/ESMP requirements are part of the engineering design and implemented at the field level. A list of plans to be prepared by contractors is given below:

1. Solid Waste & Debris Management Plan
2. Energy and Water Conservation Plans
3. Emergency Response Plan
4. Health & Safety Plan (covering both the community and the workers)
5. Emissions Monitoring Plan
6. Traffic management plan (in cases where sub-project site is surrounded by thickly populated areas and / or sensitive receptors like schools and hospitals etc.)

## 9.4. Monitoring Plan

### 9.4.1. Internal Monitoring– ESMMP

During project implementation phase, safeguards unit (SGU) of NDRMF will communicate with the Implementing Partners and confirm from time to time that IP is undertaking the obligation of compliance with ESMF/ESMP and promptly reporting any actual or potential breach of the compliance requirement after becoming aware of it. Subsequently the NDRMF safeguard team will visit the site to verify and monitor the implementation of ESMP.

Environmental and social performance will be evaluated on a semi-annual basis. The benchmark for performance will be against the applicable environmental and social safeguard requirements. Fund will ensure that the IP prepares and submits a semi-annual environmental and social monitoring report and will review and assess the IP's performance on environmental and social safeguard issues.

The Fund's M&E system will include information on safeguards compliance status and activities. Based on the review of the semi-annual monitoring reports by the IPs, the Fund's

SGU will prepare a semi-annual environmental and social performance report, and submit it to the NDRMF management and WB.

In addition to the NDRMF safeguards compliance monitoring, the head of IPs for sub-project implementation will play a pivotal role in monitoring ESMPs during implementation phase and especially where technical designs and construction related impacts are involved. The IPs M&E unit will also conduct random monitoring visits both during construction and implementation phases and the results/monitoring reports will be shared with Environment and Social Safeguard Specialist of the IPs.

### 9.4.2. Internal Monitoring - RAP

If RAPs are prepared for sub-projects, internal monitoring will be carried out routinely by the Ps assisted by the P and their results will be communicated to concerned Project Affected Persons and NDRMF for review and sharing with the World Bank through the quarterly project implementation reports. Indicators for the internal monitoring will be those related to process and immediate outputs and results. This information will be collected directly from the field by the RU and reported monthly to the PRMP to assess the progress and results of RAP implementation. The monthly progress reports will be consolidated on quarterly basis and will be submitted to NDRMF for review and sharing with the World Bank. Specific monitoring indicators will be as follows:

- Information campaign and consultation with PAPs;
- Status of land acquisition and payments on land compensation;
- Compensation for affected structures and other assets;
- Relocation of PAPs;
- Payments for loss of income/ livelihood;
- Selection and distribution of replacement land areas; and
- Income restoration activities
- Gender segregated analysis of RAP implementation
- Progress on the gender sensitive grievance redress mechanism

The above information will be collected by P with the assistance of RU and field office which are responsible for monitoring the day-to-day social and resettlement activities of the project through the following instruments:

- Review of census information for all PAPs;
- Consultation and informal interviews with PAPs;
- In-depth case studies;
- Sample survey of PAPs;
- Key informant interviews; and
- Community/ public meetings/ consultations

### 9.4.3. External Monitoring/Third Party Validation – ESMMP

NDRMF will engage third party for ESMF auditing on annual basis with the objective to evaluate the project's overall safeguards performance. The third party will also ensure that the mitigation measures are implemented as per the mitigation plan. In case of any deviation, corrective actions will be taken where necessary. The final report of the third party will be shared with stakeholders for taking corrective actions if needed.

### 9.4.4. External Monitoring/Third Party Validation – RAP

For RAPs, the third party will evaluate the performance to ensure compliance as per Fund's and the World Bank Safeguard Policies. For sub-projects whose implementation time-frame will be under 6 months will be monitored on quarterly basis. The indicators for External Monitoring will include:

- Review and verify internal monitoring reports prepared by the Ps assisted by social safeguard specialist and its field offices;
- Review of the socio-economic baseline census information of pre-project affected persons;
- Identification and selection of impact indicators;
- Impact assessment through formal and informal surveys/interview with the project affected persons;
- Consultation with PAPs, officials, community leaders for preparing external monitoring report; and
- Assess the resettlement efficiency, effectiveness, impact and sustainability, drawing lessons for future resettlement policy formulation and planning.

### 9.4.5. Reporting

***Environmental and Social Mitigation and Monitoring Report***

The IPs will compile safeguards compliance monitoring reports on quarterly basis. The report will also include proceedings of the public consultations held during the quarter, as per the schedule given in this ESMF. The report will be submitted to the SGU NDRMF for review and onward sharing with the World Bank. Environmental and social performance will be evaluated on a semi-annual basis. The benchmark for performance will be the ongoing compliance against the applicable environmental and social safeguard requirements. NDRMF will ensure that the IPs prepares and submits a semi-annual environmental and social monitoring report and will review and assess the IA's performance on environmental and social safeguard issues.

***Resettlement Monitoring Reports***

If RAPs are prepared for the sub-projects, the IPs will prepare monthly progress reports on RAP implementation activities with assistance of social safeguards officer and will submit to

the Sub-project Director – IP and based on the monthly progress report, quarterly progress reports will be prepared and submitted to NDRMF for review and onward submission to the World Bank.

Fund will share the third-party annual audit reports with the IPs and the World Bank for review in order to assist in ascertaining whether resettlement goals have been achieved and more importantly, whether livelihoods and living standards have been restored/enhanced. The reports will include suitable recommendations for improvement. Monitoring reports will be submitted on regular intervals as specified (i.e. MPR and QPR). The M&E documents and other social reports will also be publicly available, including posting in project website.

## 9.5. Capacity Development and Trainings

### 9.5.1. Environmental and Social Mitigation and Monitoring Plan

Capacity building and training of the staff associated with ESMF/ESMP implementation will be required for effective environmental and social management. Specific trainings on environmental and social impacts and mitigation will be arranged for the Project Directors, Environment and Social Safeguards Specialists, the head of IPs for sub-project implementation and relevant members to deliver their implementation and monitoring responsibilities in an organized and effective manner as per requirement of the ESMMP. The main objective of the trainings is to enhance the technical capacity of staff associated with ESMMP implementation and to keep the IPs, aware of the emerging environmental and social issues, and enable them to resolve those issues through proposed mitigation measures. **Table 9.2** gives a tentative program for capacity building and trainings. 20 workshops are to be held throughout the course 5 years project. This includes annual refresher trainings. The workshops will focus on environmental issues arising during ESMMP implementation, mitigation measures, and health & safety. They will also focus on sensitizing the participants about environmental responsibility, managing the on-ground problems, and assuring implementation of the ESMMP. Each workshop will have no more than thirty participants. In case of extra participants, extra workshops will be conducted.

**Table 9.2:** Capacity Building and Training Plan

| Description of Training | Training Module | Location | Frequency | Participation |
|---|---|---|---|---|
| Two-day Training Workshop | Objectives, need and use of ESMMF;<br>Legal requirements of the ESMP (Legislations and World Bank Operational Policies) ;<br>Management of environmental issues and mitigation strategies as per ESMP; Monitoring Mechanism<br>Documentation and reporting procedures. | IPs, Islamabad<br>Lahore<br>Karachi | Workshop at the start of the project | IP Staff including Project Director, Project Coordinator, Environment and Social Safeguards Specialists , Infrastructure Specialists, Engineers, M&E Officer etc. |

| Description of Training | Training Module | Location | Frequency | Participation |
|---|---|---|---|---|
| One Day Training Workshop | ESMMP with special focus on mitigation measures during design stage | IPs<br>Islamabad<br>Lahore<br>Karachi | One training workshop at design stage of project | All architects, contractors, sub-contractors, and supervision consultants |
| One Day Training Workshop | ESMMP with special focus on mitigation measures during construction stage | IPs<br>Islamabad<br>Lahore<br>Karahci | One workshop every year during construction period of the project | All contractors, sub-contractors, and supervision consultants |
| One Day Training Workshop | ESMMP with special focus on mitigation measures during operational phase | IPs<br>Islamabad<br>Lahore<br>Karachi | One workshop every year during operational phase of the project | PMD, Forest and Wildlife departments staff |
| One Day Training Workshop* | IPPF with focus on sub-project specific IP Plans development | IPs<br>Islamabad | One workshop once activities under Component 2 are finalized | IP Staff including Project Director, Project Coordinator, Environment and Social Safeguards Specialists , M&E Officer etc.<br>All contractors, sub-contractors, and supervision consultants |
| One Day Refresher Trainings | ESMMP Implementation and Reporting | IPs<br>Islamabad<br>Lahore<br>Karachi | One workshop every year | IP Staff |

- Will be done only if any Component 2 activities are planned in or around the *Kalash* areas

### 9.5.2. Resettlement Planning Framework (RPF)

**Table 9.3** summarizes the training requirements of all the relevant staff to be involved in the implementation of Resettlement Policy Framework and Resettlement Action Plans if required.

**Table 9.3: Capacity Building and Training Plan for RAP**

| Description of Training | Training Module | Location | Frequency | Participation |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| One Day Training Workshop on RPF and RAP | Application and use of RPF<br>Social Assessment process<br>LA process<br>Necessity for RAP and its preparation process<br>Implementation and Monitoring<br>Institutional Mechanism<br>Grievance Mechanism | IP | Annually | RU, IP, Consultants, relevant government officials, Local Community Reps., and other stakeholders |

# Chapter 10. ESMF implementation Budget

Approximate implementation cost of ESMF is given below:

**Table 10.1:ESMF Implementation Budget**

| # | Description | Unit | Quantity | Unit Rate PKR | Total PKR | Total USD |
|---|---|---|---|---|---|---|
| 1. | Trainings (including materials, logistics, venue) | Quarters | 20 | 2,000,000 | 40,000,000 | 280,000 |
| 2. | Environment Specialist | Months | 60 | 300,000 | 18,000,000 | 126,000 |
| 3. | Environment Assistant | Months | 60 | 50,000 | 3,000,000 | 21,000 |
| 4. | Social Safeguard Specialist | Months | 60 | 200,000 | 12,000,000 | 84,000 |
| 5. | Land Management and Resettlement Specialist | Months | 60 | 200,000 | 12,000,000 | 84,000 |
| 6. | Gender Mainstreaming Specialist | Months | 60 | 200,000 | 12,000,000 | 84,000 |
| 7. | External Monitors (5 annual reports, 1 inception and end project evaluation report) | Reports | 7 | 2,000,000 | 14,000,000 | 98,000 |
| 8. | Environmental Testing | | | | 4,000,000 | 28,000 |
| 9. | Consultants | Reports | 4 | 500,000 | 2,000,000 | 14,000 |
| 10. | Contingency @ 20 % | | | | 22,200,000 | 155,400 |
| 11. | **Total** | | | | **133,200,000** | 932,401 |

Budget for mitigation measures for each sub-project will be identified in site specific ESMPs.

Finances for RAP cost, including compensation, allowances, and administration of RAP preparation and implementation, will be provided by the Government as counterpart funds. Costs for external monitoring tasks can be allocated under the loan. In order to ensure that sufficient funds are available for RAP implementation, the Governments will have to allocate 100% of the cost of compensation at replacement cost and expected allowances estimated in the RAP plus 15% of contingencies before RAP Implementation.

# Chapter 11. Grievance Redress Mechanism

## 11.1. Overview and scope

The Grievance Redress Mechanism proposed here spans the entire project implementation and will cater to both the directly and indirectly affected population/beneficiaries. Though the GRM proposed here has been designed to address environmental and social problems identified during implementation, it will also cater to manage any disconnects that emerge from the field level and that has significant implications for effective implementation of the sub-project interventions.

The offices of Implementation Partners will serve as the secretariat for the Grievance Redress Committee (GRC-Project) that will be responsible for providing oversight on the entire GRM process at a strategic level and monitoring of complaints management.

In addition, NDRMF has established and operationalized GRM system and can be accessed if grievance is not managed by IPs up to the satisfaction level of the complainant/stakeholders. NDRMF will process the grievance in accordance of its GRM policy guidelines through notified grievance redress committee (GRC).

## 11.2. Objectives of the Grievance Redress Mechanism

The grievance redress mechanism (GRM) will be consistent with the requirements of the World Bank safeguard policies to ensure mitigation of community concerns, risk management, and maximization of environmental and social benefits. The overall objective of the GRM is therefore to provide a robust system of procedures and processes that provides for transparent and rapid resolution of concerns and complaints identified at the local level.

The GRM will be accessible to diverse members of the community, including women, senior citizens and other vulnerable groups. Culturally appropriate communication mechanisms will be used at all sub- project sites both to spread awareness regarding the GRM process as well as complaints management.

## 11.3. Communication & Awareness on GRM

The final processes and procedures for the GRM will be translated in to local language, if needed and disseminated at all sub-project locations. These shall be made available (in both leaflet and poster format) to all sub-project locations.

## 11.4. Proposed Mechanisms

A grievance redress mechanism (GRM) will be operational at each subproject level to facilitate amicable and timely resolution of complaints and grievances of the stakeholders including communities and project affected personnel (PAPs) (male and female) regarding all environmental and social issues.

Under the GRM, Complaint Register (CR) will be maintained by the IP at each subproject

level. All complaints and grievances will be logged in the register along with details including date of complaint, name and address of complainant, location, and description of complaint. The GRC will then fill additional details in the Register including the corrective action needed, timeframe for corrective action to be taken, and person/project entity responsible for corrective action. Once the corrective action is implemented, the GRC will document the associated details in the Register including the description of action take, date of action completion, views of the complainant regarding the corrective action, and any residual grievance. GRM procedures will be disseminated particularly among the local communities and PAPs. GRM will be gender responsive, culturally appropriate, and readily accessible to the PAPs at no cost and without retribution. A multi-tier GRM has been proposed for the project is described below.

- Tier 1 (Community level): When a grievance arises, the PAP (male or female) may contact directly with the PAPC (male or female) Field implementation Unit (FIU) or IP. PAPC may resolve the concern at field level. If the issue is successfully resolved, no further follow-up is required.
- Tier 2 (GRC level): If no solution can be found at Tier 1, the PAP (male or female) may convey concern/grievance to the Grievance Redress Committee (GRC), either verbally or in writing. The GRC will comprise of IP's general manager (GM), IP's Environment and Social Specialists, Resettlement Specialist, member of PAP Committee (male and female). The GRC will log the complaint along with relevant details in the complaint register (CR). For each complaint, the GRC will investigate and prepare a fact-finding report to assess its eligibility, and identify an appropriate solution. The GRC will, as appropriate, instruct the responsible entity to take corrective actions. The complaint will be redressed/appropriately responded within fifteen days. The GRC will review the responsible entity's response and undertake additional monitoring as needed. During the complaint investigation, the GRC will work in close consultation with the Contractors, Environment Specialist, the RAP Consultants, FIU, and IP.
- Tier 3 (IP level): If the complainant is not satisfied/issue not resolved at the Tier 2, then GRC will forward the complaint to IP for remedial measures and decisions accordingly. The committee at IP level will consist of GM, Environment specialist, Resettlement Specialist of IP, and ESMP/ESIA and RAP Consultants. The complaint at the Tier 3 will be resolved within three weeks.
- Tier 4: If the PAPs are still not satisfied with the decision of IP, then the complainant(s) may enter the reference in the Court of law.

## 11.5. Procedures

- Any grievance in written, verbal or digital form shall be recorded by the receiving office in CR which will be maintained at IP and FIU;
- A serial number will be assigned to it together with the date of receipt;
- A written acknowledgement to a complainant shall be sent promptly and in any case

within three working days;

- The acknowledgement shall contain the name and designation of the officer who will deal with the grievance; information that necessary action will be taken within the specified working days from the date of receipt of the grievance by the officer concerned; name, address, email address and phone number of the authority which the complainant could approach if the matter is not redressed within the specified timeframe or if s/he is not satisfied with the action taken;
- If the office receiving the grievance/complaint is not the one designated to consider and dispose it, the receiving office shall forward it to the designated office, but after having complied with the requirements at 1 to 3 above;
- The office designated to consider the matter shall make every effort to ensure that grievances/appeals are considered and disposed-off within the stipulated period of fifteen days in case of Tier 2 and three weeks in case of Tier 3.
- If the grievance redress mechanism fails to satisfy the aggrieved affected person at all levels, s/he can submit the case to the appropriate court of law.

### 11.6. Grievance Closure

The complaint shall be considered as disposed-off and closed when:

- The designated officer/authority has acceded to the request of the complainant fully;
- Where the complainant has indicated acceptance of the response in writing;
- Where the complainant has not responded to the concerned officer FIU/IP within one month of being intimated about the final decision of the grievance officer on his grievance/complaint;
- Where the complainant fails to attend the proceedings of the concerned officer at FIU/IP within the stipulated period of the disposal of the complaint; and
- Where the complainant withdraws his/her complaint.

# Chapter 12. Disclosure

This ESMF and RPF, and IPPF will be disclosed on the websites of PMD, NDRMF and on the World Bank Info Shop. Hard copies of this ESMF will also be shared with the Federal and Provincial EPAs, project stakeholders, contractors, Civil Society Organizations etc. A copy of the ESMF will be placed in the Project Implementation Units, PMD, Forest and Wildlife department for public access. The Urdu translation of the Executive Summary of the ESMF will also be distributed to all relevant stakeholders, especially to the communities in the project areas. The purpose will be to inform them about the project activities, negative environmental and social impacts expected from the project and proposed mitigation measures.

The executive summary of the RAP (if prepared for any sub-project) will be translated in local language *(Urdu)*, which is understandable to all project affected persons and local community and will be provided to all PAPs as well.

This information brochure will also be disclosed in local language to the PAPs and some other local key persons resided in the vicinity of the project area, so that each PAP could be able to understand the project activities, i.e. the project, cut-off date, eligibility for entitlement of compensation, methods of measurement, price assessment & valuation of losses, payment of compensation, GRM, cost & budget and monitoring & evaluation.

The Sub-project office (IP) and social safeguards specialist will keep the PAPs informed about the impacts and entitlement of compensation and facilitate in addressing grievance (s). The ESMF study team has made an endeavor to hold consultative and scoping sessions with these stakeholders to evince their views on the proposed Project, *inter-alia*, their opinions, suggestions, understanding on various issues and concerns.

# References


1. Ahmad K.S. (1951) "Climatic Regions of West Pakistan" *Pakistan Geographical Review, 6.1.*
2. Ali, S.I. 1978. The Flora of Pakistan: some general analytical remarks. Notes, Royal Botanical Garden, Edinburgh, 36:427-439.
3. Beg A.R. *(1975) "Wildlife Habitats of Pakistan"* Bulletin No. 5, Pakistan Forest Institute, Peshawar.
4. CDA By laws Capital Development Authority
5. Chaghtai S. et. al (1984) "Poisonous Plants of Pakistan". Pakistan Study Centre, Peshawar. Journal of Pakistan.
6. Champion H.G, Seth and Khattak G.M. (1965) "Forest Types of Pakistan" Pakistan Forest Insittute
7. EUAD & IUCN. 1992. The Pakistan National Conservation Strategy. EUAD & IUCN, Pakistan.
8. GoP, Irrigation Drainage and Flood Control Research Council (1983) "Desertification problems: Extent and Remedial Measures."
9. GoP, Pakistan Agricultural Research Council (1980) "Agro-Ecological Regions of Pakistan" Islamabad.
10. GoP, Population Census Organization (1998) "Handbook of Population Census Data", Islamabad.
11. Government of Pakistan, Annual Consolidated Report on the Working of Labour Laws in Pakistan for the Years 1998 and 1999.
12. Groombridge, B. 1988. Balochistan Province, Pakistan: a Preliminary Environmental Profile. IUCN & WCMC, Cambridge, UK.
13. ICT Zoning Regulations 1993and 2005
14. IUCN. 1990. IUCN Red List of Threatened Animals. IUCN, Gland, Switzerland and Cambridge, UK.
15. Johnson, B.CL. (1979) "Pakistan" Heineman, London.
16. Khalid, Z.M. 1996. Biotechnological Solution to Coloured Effluent from Textile Industry. 6-7.
17. Khan, C.M.A. (1974) "Brief Introduction to kinds of Rangelands and vegetation as affected by climate, soil and history for use in Pakistan" Proceedings of the Pakistan Forestry Conference, Pakistan Forest Institute, Peshawar.
18. Kureshi K.U (1961) "Growth of Settlements in West Pakistan" Pakistan Geographical Review 1,6,2, Lahore.
19. Kureshy K.U. (1971) "A Geography of Pakistan" Oxford University, Karachi.
20. Marshall J (193 ) "Mohenjodaro and Indus Civilization Vol-1, London.
21. NCCW, 1978. Wildlife Conservation Strategy: Pakistan. National Council for Conservation of Wildlife, Islamabad, Pakistan. Unpublished Report, 73 pp.
22. Stewart R.R. (1972) "Flora of West Pakistan: An Annotated Catalogue of the Vascular Plants of West Pakistan and Kashmir" edited by Nasir E and Ali S.I, Karachi.
23. Zehngraff P (1987) "The Forest and Forestry Programme of West Pakistan", Lahore.
24. Qadri M.A.H. (1974) "Wildlife-Pakistan" in proceedings National Seminar on Ecology, Environment and Afforstation 21-24 Oct, 1974, Islamabad,
25. Rafiq C.M. (1971) "Crop Ecological Zones of the Indus Plains", Central Soil Research Institute, Soil Survey Project of Pakistan, Lahore.
26. Selod Y.1 (1969) "Types of Vegetation of West Pakistan" (Provisional) Agricultural Research Council, Islamabad (only a map)
27. Wheeler R.E.M. (1953) The Indus Civilization Cambridge University Pre.

# ANNEXURES

# Annexure-1: Environment and Social Screening Checklists

## National Disaster Risk Management Fund (NDRMF)

***Environment & Social Screening & Categorization Form (ESCF)***

**Instructions:**

(i) The Environment / Social Specialist shall complete this form to support the categorization of a project. It shall be submitted to the NDRMF Safeguards Unit for review & endorsement.
(ii) This checklist focuses on environmental issues and concerns as per NDRMF's ESMS and WB Safeguard Policies
(iii) This form is to be completed assuming the "without mitigation" case. The purpose is to identify potential impacts.

**1. FIP Name**

**2. Project Title:**

**3. Project Location**

**4. Total Project Cost (million PKR**

**5. Project GPS Co-ordinates N E**

**6. The proposed project activity is NOT listed in the Prohibited Investment Activities List (PIAL) (please refer to Annexure I below).**
☐ **YES** ☐ **No**

**7. Please provide details of any significant expected impacts (''without mitigation'' case) due to the proposed project activities:**

### Environmental Screening Checklist

| S. No. | Type of expected impact | Yes/No | details of the impacts | Proposed mitigation measures |
|---|---|---|---|---|
| 1. | Will construction or operation of the project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply? | | | |
| 2. | Will the project involve cutting of trees? | | | |
| 3. | Are there any protected areas on or around the locations which could be affected by the project? | | | |
| 4. | Are there any ecologically sensitive areas on or around the locations which could be affected by the project? | | | |
| 5. | Are there any areas on or around the location which are used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration? | | | |
| 6. | Are there any areas on or around the locations which are occupied by the sensitive land-use e.g. hospitals, schools, worship places, community facilities? | | | |
| 7. | Will the project involve use, storage, transport, handling or production of substance or materials, which could be harmful to human health or the environment? | | | |
| 8. | Will the project release pollutants or any hazardous, toxic or noxious substances to air? | | | |
| 9. | Will the project generate high levels of dust during construction and operation? | | | |
| 10 | Will the project cause noise and vibration or release of light, heat energy or electromagnetic radiation? | | | |
| 11 | Will the project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters and groundwater? | | | |
| 12 | Is the planting method including type of species adequate | | | |

| S. No. | Type of expected impact | Yes/No | details of the impacts | Proposed mitigation measures |
|---|---|---|---|---|
| | and not disturbing the original ecosystems? | | | |
| 13 | Is the project anticipated to damage the aquatic ecology as a result of surface water contamination? | | | |
| 14 | Will the project involve demolition ofAsbestos containing materials? If yes, Refer to Annexure 4 of the main document (Asbestos use for the new construction is not allowed under the project). | | | |
| 15 | Will the project interventions result in improper sanitation and solid waste disposal systems? | | | |
| 16 | Is there proper mechanism for solid waste disposal and sanitation? | | | |
| 17 | Will the project interventions result in road blocking and temporary flooding due to land excavation during rainy season? | | | |
| 18 | Are the project interventions located in flood prone areas? If yes, Kindly refer to Annexure 3 of the main document. | | | |
| 19 | Will the project have risks to community health and safety caused by (any or all of the below)<br>(i) Management and disposal of waste;<br>(ii) Civil or electrical works;<br>(iii) Accidental and natural hazards, particularly where structural elements or components of project are accessible to members of affected community; and<br>(iv) Fire, electric shock or failure of civil structures during operation. | | | |
| 20 | Will the project have occupational and community health and safety risks? | | | |
| 21 | Will the project result in generation of disease vectors due to project activities. | | | |
| 22 | Would physical cultural resources be found in the project area? If yes, please refer to Annexures 5 | | | |
| 23 | Are there any risks of disturbance of local ecosystems/wildlife/biodiversity? | | | |
| 24 | Are threre any biotic/abiotic features to be considered for the afforestation/reforestation methods. E.g species selection, season for plannting etc. | | | |

| S. No. | Type of expected impact | Yes/No | details of the impacts | Proposed mitigation measures |
|---|---|---|---|---|
| 25 | Are there any associated activities or potential induced impacts associated with the implementation of afforestation/reforestation activities? | | | |

**Project Category Recommendation (Environment)**

**13. It is recommended that based on the available project information and subsequent analysis, the project should be placed in (please tick one):**

☐ **Category 'A'** ☐ **Category 'B'** ☐ **Category 'C'**

**Note:**
**Category "A" sub-project will not be eligible for funding from the project.**
**Category "B" sub-project will require the preparation of ESMP.**
**Category "C" sub-project will require the completion of environmental checklist**

**14. Please provide an explanation to justify the Categorization above:**

_____
_____
_____
_____

**15. Recommendation on the specific mitigation measures to be implemented (Summarize the screening result, select from ESMMP (Chapter 6), ECoP (Annexure 2) and/or specify other measures to be undertaken by the sub-project)**

_____
_____
_____
_____

**Screening & Categorization Conducted by:** **Endorsed by:**

## Social Screening Checklist

| Probable Social Impacts | Yes | No | Not Known | Details/Remarks |
|---|---|---|---|---|
| 1. Will the sub-project include any construction? | | | | |
| 2. Does the sub-project include up-gradation restoration or rehabilitation of existing physical structures? | | | | |
| 3. Is the sub-project likely to cause any damage to or loss of infrastructure i.e. housing, other assets, or use of natural resources? | | | | |
| 4. Is the site chosen for this work, free from encumbrances/obstruction? | | | | |
| 7. Is land for material mobilization, storage, contractor's camp or transport for the civil works available within the government owned land? | | | | |
| 10. Will there be loss of incomes and livelihoods (means/source of income)? | | | | |
| 11. Will people permanently or temporarily lose use or access to land, facilities, services, or natural resources i.e. pastures, water ways etc.? | | | | |
| 12. Are any religious or ethnic minorities affected? | | | | |
| 16. Is there any temporary impact likely to occur? | | | | |
| Will the subproject create significant/limited/no social impacts? | | | | |
| Will the project have impact on livelihood and economic activity. | | | | |
| Any reduction of access to traditional dependent communities (to areas where they earn for their primary or substantial livelihood). | | | | |

| Probable Social Impacts | Yes | No | Not Known | Details/Remarks |
|---|---|---|---|---|
| Any displacement or adverse impact on tribal settlement(s). | | | | |
| Adverse impacts to women, including economic and safety concerns. | | | | |
| Impact on infrastructure (roads, water supply, any other type of infrastructure) | | | | |
| Possible conflicts with and/or disruption to local community and/or visitors. | | | | |
| Health risks due to unhygienic conditions at workers 'camps. | | | | |
| Safety hazards during construction. | | | | |
| Will the activity engage in exploitative and forced labour? | | | | |
| Will the activity engage in harmful child labour? | | | | |
| Will the activity take place in or near a site that has historic, or cultural importance for the local community? | | | | |
| Will the activity result in production of hazardous liquid and solid waste? | | | | |
| Others (Please specify) | | | | |

**Project Category Recommendation (Social)**

**13. It is recommended that based on the available project information and subsequent analysis, the project should be placed in (please tick one):**

☐ **Category 'A'** ☐ **Category 'B'** ☐ **Category 'C'**

**Note:**

**Category "A" sub-project will not be eligible for funding from the project.**
**Category "B" sub-project will require the preparation of ESMP.**
**Category "C" sub-project will require the completion of social checklist**

**14. Please provide an explanation to justify the Categorization above:**

_____
_____
_____
_____

**15. Recommendation on the specific mitigation measures to be implemented (Summarize the screening result, select from ESMMP (Chapter 6), ECoP (Annexure 2) and/or specify other measures to be undertaken by the sub-project)**

_____
_____
_____
_____

**Screening & Categorization Conducted by:** **Endorsed by:**

## Land Acquisition Checklist

| Potential Impacts | Yes | No | Expected | Remarks |
|---|---|---|---|---|
| Does the sub-project involve any physical construction work, i.e. rehabilitation, reconstruction or new construction? Specify in "remarks" column. | | | | |
| Does the sub-project involve impacts on land, assets and people, if "Yes" try to quantify the impacts and check following items? If "No" impacts, explain the situation in "remarks" and move to section 2. | | | | |
| **Potential impacts** | | | | |
| **Land** (quantify and describe types of land in "remarks column". | | | | |

| **Potential Impacts** | **Yes** | **No** | **Expected** | **Remarks** |
|---|---|---|---|---|
| Government or state owned land free of occupation (agriculture or settlement) | | | | |
| Private land | | | | |
| ▪ Residential | | | | |
| ▪ Commercial | | | | |
| ▪ Agriculture | | | | |
| ▪ Communal | | | | |
| ▪ Others (specify in "remarks"). | | | | |
| **Land-based assets:** | | | | |
| ▪ Residential structures | | | | |
| ▪ Commercial structures (specify in "remarks") | | | | |
| ▪ Community structures (specify in "remarks") | | | | |
| ▪ Agriculture structures (specify in "remarks") | | | | |
| ▪ Public utilities (specify in "remarks") | | | | |
| ▪ Others (specify in "remarks") | | | | |
| **Agriculture related impacts** | | | | |
| ▪ Crops and vegetables (specify types and cropping area in "remarks). | | | | |
| ▪ Trees (specify number and types in "remarks"). | | | | |
| ▪ Others (specify in "remarks"). | | | | |
| **Access to Natural Habitats / Resources** | | | | |
| Will the sub-project cause involuntary restriction to any protected areas or other natural habitats? | | | | |

| **Potential Impacts** | **Yes** | **No** | **Expected** | **Remarks** |
|---|---|---|---|---|
| How many people would likely be affected? | | | | |
| Will there be any impact on their livelihoods? | | | | |
| **Affected Persons (DPs)** | | | | |
| ▪ Number of DPs | | | | |
| ▪ Males | | | | |
| ▪ Females | | | | |
| ▪ Titled land owners | | | | |
| ▪ Tenants and sharecroppers | | | | |
| ▪ Leaseholders | | | | |
| ▪ Agriculture wage laborers | | | | |
| ▪ Encroachers and squatters (specify in remarks column). | | | | |
| ▪ Vulnerable DPs (e.g. women headed households, minors and aged, orphans, disabled persons and those below the poverty line). Specify the number and vulnerability in "remarks". | | | | |
| ▪ Others (specify in "remarks") | | | | |
| **Section 2** | | | | |
| Others (specify in "remarks". | | | | |
| Are there any other minority groups affected by land acquisition or project activities? If "Yes" check the following items | | | | |
| ▪ Minority groups (specify in "remarks"). Describe nature of impacts | | | | |

**Project Category Recommendation (Land Acquisition & Resettlement)**

**13. It is recommended that based on the available project information and subsequent analysis, the project should be placed in (please tick one):**

☐ **Category 'A'** ☐ **Category 'B'** ☐ **Category 'C'**

**Note:**
**Category "A" sub-project will not be eligible for funding from the project.**
**Category "B" sub-project will require the preparation of ESMP.**
**Category "C" sub-project will require the completion of land acquisition & resettlement checklist**

**14. Please provide an explanation to justify the Categorization above:**

_____
_____
_____
_____

**15. Recommendation on the specific mitigation measures to be implemented (Summarize the screening result, select from ESMMP (Chapter 6), ECoP (Annexure 2) and/or specify other measures to be undertaken by the sub-project)**

_____
_____
_____
_____

**Screening & Categorization Conducted by:** **Endorsed by:**

## Indigenous Peoples Checklist*

*This checklist may be edited and localized prior to implementation

| KEY CONCERNS (Please provide elaborations in the Remarks column) | YES | NO | NOT KNOWN | Remarks |
|---|---|---|---|---|
| **A. Indigenous Peoples Identification** | | | | |

| **KEY CONCERNS**<br>(Please provide elaborations in the Remarks column) | **YES** | **NO** | **NOT KNOWN** | **Remarks** |
|---|---|---|---|---|
| 1. Are there socio-cultural groups present in or using the project area who may be considered as "tribes" (hill tribes, schedules tribes, tribal peoples), "minorities" (ethnic or national minorities), or "indigenous communities" in the project area? | | | | |
| 2. Are there national or local laws or policies as well as anthropological researches/studies that consider these groups present in or using the project area as belonging to "ethnic minorities", scheduled tribes, tribal peoples, national minorities, or cultural communities? | | | | |
| 3. Do such groups self-identify as being part of a distinct social and cultural group? | | | | |
| 4. Do such groups maintain collective attachments to distinct habitats or ancestral territories and/or to the natural resources in these habitats and territories? | | | | |
| 5. Do such groups maintain cultural, economical, social, and political institutions distinct from the dominant society and culture? | | | | |
| 6. Do such groups speak a distinct language or dialect? | | | | |
| 7. Have such groups been historically, socially and economically marginalized, disempowered, excluded, and/or discriminated against? | | | | |
| 8. Are such groups represented as "Indigenous Peoples" or as "ethnic minorities" or "scheduled tribes" or "tribal populations" in any formal decision-making bodies at the national or local levels? | | | | |
| **B. Identification of Potential Impacts** | | | | |

| **KEY CONCERNS**<br>(Please provide elaborations in the Remarks column) | **YES** | **NO** | **NOT KNOWN** | **Remarks** |
|---|---|---|---|---|
| 9. Will the project directly or indirectly benefit or target Indigenous Peoples? | | | | |
| 10. Will the project directly or indirectly affect Indigenous Peoples' traditional socio-cultural and belief practices? (e.g. child-rearing, health, education, arts, and governance) | | | | |
| 11. Will the project affect the livelihood systems of Indigenous Peoples? (e.g., food production system, natural resource management, crafts and trade, employment status). | | | | |
| 12. Will the project be in an area (land or territory) occupied, owned, or used by Indigenous Peoples, and/or claimed as ancestral domain? | | | | |
| **C. Identification of Special Requirements**<br>*Will the project activities include:* | | | | |
| 13. Commercial development of the cultural resources and knowledge of Indigenous Peoples? | | | | |
| 14. Physical displacement from traditional or customary lands? | | | | |
| 15. Commercial development of natural resources (such as minerals, hydrocarbons, forests, water, hunting or fishing grounds) within customary lands under use that would impact the livelihoods or the cultural, ceremonial, spiritual uses that define the identity and community of Indigenous Peoples? | | | | |
| 16. Establishing legal recognition of rights to lands and territories that are traditionally owned or customarily used, occupied or claimed by indigenous peoples? | | | | |
| 17. Acquisition of lands that are traditionally owned or customarily used, occupied or claimed by indigenous peoples? | | | | |

**Project Category Recommendation (IPPF)**

**13. It is recommended that based on the available project information and subsequent analysis, the project should be placed in (please tick one):**

☐ **Category 'A'** ☐ **Category 'B'** ☐ **Category 'C'**

**Note:**
**Category "A" sub-project will not be eligible for funding from the project.**
**Category "B" sub-project will require the preparation of IPMP.**
**Category "C" sub-project will require the completion of IPP checklist**

**14. Please provide an explanation to justify the Categorization above:**

_____
_____
_____
_____

**15. Recommendation on the specific mitigation measures to be implemented (Summarize the screening result, select from ESMMP (Chapter 6), ECoP (Annexure 2) and/or specify other measures to be undertaken by the sub-project)**

_____
_____
_____
_____

**Screening & Categorization Conducted by:** **Endorsed by:**

## Gender Inclusion Checklist

1. Was gender analysis conducted for the preparation of the project proposal?

☐ Yes ☐ No

1.1 What are the key gender issues that are likely to be relevant for this project?

2. Is a gender action plan (GAP) prepared?

☐ Yes ☐ No

2.1 If no, why? If yes, what are the key actions proposed to address specific needs of women/girls and vulnerable groups?

2.2 Are there any financial resources allocated to roll out the GAP?

☐ Yes ☐ No

2.3 Are there any human resources allocated for the implementation of the GAP?

☐ Yes ☐ No

4. Are there any adverse risks or impacts of the project on women, girls and vulnerable groups?

☐ Yes ☐ No

4.1 If yes, is there a plan prepared to minimize negative/adverse impact on women, girls, and vulnerable groups?

☐ Yes ☐ No

5. Are there any mechanisms in place for monitoring and evaluation of social and gender impacts?

☐ Yes ☐ No

5.1 If yes, how social and gender impacts will be monitored?

6. Indicate the intended gender mainstreaming category[58]:

☐ GEN (Gender Equality & Social Inclusion Theme) ☐ GEN (Effective Gender Equality & Social Inclusion Mainstreaming Theme)

☐ SGE (Some Gender & Social Inclusion Elements) ☐ NGE (No Gender & Social Inclusion Elements)

**Project Category Recommendation (Environment)**

[58] If, the project has a scope for gender equity and/or has some gender elements then development of a GAP is required.

**13. It is recommended that based on the available project information and subsequent analysis, the project should be placed in (please tick one):**

☐ **Category 'A'** ☐ **Category 'B'** ☐ **Category 'C'**

**Note:**
**Category "A" sub-project will not be eligible for funding from the project.**
**Category "B" sub-project will require the preparation of ESMP.**
**Category "C" sub-project will require the completion of Gender checklist**

**14. Please provide an explanation to justify the Categorization above:**

_____
_____
_____
_____

**15. Recommendation on the specific mitigation measures to be implemented (Select from ESMMP (Chapter 6), ECoP (Annexure 2) and/or specify other measures to be undertaken by the sub-project)**

_____
_____
_____
_____

**Screening & Categorization Conducted by:** **Endorsed by:**

## ANNEXURE I –Prohibited Investment Activities List (PIAL)

The following do not qualify for NDRMF financing:

(i) Production or activities involving harmful or exploitative forms of forced labor[59] or child labor;[60]

[59] Forced labor means all work or services not voluntarily performed, that is, extracted from individuals under threat of force or penalty.
[60] Child labor means the employment of children whose age is below the host country's statutory minimum age of employment or employment of children in contravention of International Labor Organization Convention No. 138 "Minimum Age Convention" (www.ilo.org).

(ii) Production of or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements or subject to international phase outs or bans, such as (a) pharmaceuticals,[61] pesticides, and herbicides,[62] (b) ozone-depleting substances,[63] (c) polychlorinated biphenyls[64] and other hazardous chemicals,[65] (d) wildlife or wildlife products regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora,[66] and (e) transboundary trade in waste or waste products;[67]

(iii) Production of or trade in weapons and munitions, including paramilitary materials;

(iv) Production of or trade in alcoholic beverages;[68]

(v) Production of or trade in tobacco;[69]

(vi) Gambling, casinos, and equivalent enterprises;[70]

(vii) Production of or trade in radioactive materials,[71] including nuclear reactors and components thereof;

(viii) Production of, trade in, or use of unbonded asbestos fibers;[72]

(ix) Commercial logging operations or the purchase of logging equipment for use in primary tropical moist forests or old-growth forests; and

(x) Marine and coastal fishing practices, such as large-scale pelagic drift net fishing and fine mesh net fishing, harmful to vulnerable and protected species in large numbers and damaging to marine biodiversity and habitats.

[61] A list of pharmaceutical products subject to phaseouts or bans is available at http://www.who.int.

[62] A list of pesticides and herbicides subject to phaseouts or bans is available at http://www.pic.int.

[63] A list of the chemical compounds that react with and deplete stratospheric ozone resulting in the widely publicized ozone holes is listed in the Montreal Protocol, together with target reduction and phaseout dates. Information is available at http://www.unep.org/ozone/montreal.shtml.

[64] A group of highly toxic chemicals, polychlorinated biphenyls are likely to be found in oil-filled electrical transformers, capacitors, and switchgear dating from 1950 to 1985.

[65] A list of hazardous chemicals is available at http://www.pic.int.

[66] A list is available at http://www.cites.org.

[67] As defined by the Basel Convention; see http://www.basel.int.

[68] This does not apply to subproject sponsors who are not substantially involved in these activities. Not substantially involved means that the activity concerned is ancillary to a subproject sponsor's primary operations.

[69] This does not apply to subproject sponsors who are not substantially involved in these activities. Not substantially involved means that the activity concerned is ancillary to a subproject sponsor's primary operations.

[70] This does not apply to subproject sponsors who are not substantially involved in these activities. Not substantially involved means that the activity concerned is ancillary to a subproject sponsor's primary operations.

[71] This does not apply to the purchase of medical equipment, quality control (measurement) equipment, and any equipment for which the NDRMF considers the radioactive source to be trivial and adequately shielded.

[72] This does not apply to the purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.

# Annexure-2: Environmental Code of Practices

**Introduction**

The objective of preparation of the Environmental Code of Practices (ECP) is to address less significant environmental impacts and all general construction related impacts of the proposed project implementation. The ECPs will provide guidelines for best operating practices and environmental management guidelines to be used for the preparation of ESMP and to be followed by the contractors/Implementing Partners for sustainable management of all environmental issues.

ECP 1: Waste Management

ECP 2: Fuels and Hazardous Substances Management

ECP 3: Water Resources Management

ECP 4: Drainage Management

ECP 5: Soil Quality Management

ECP 6: Erosion and Sediment Control

ECP 7: Borrow Areas Development & Operation

ECP 8: Air Quality Management

ECP 9: Noise and Vibration Management

ECP 10: Protection of Flora

ECP 11: Protection of Fauna

ECP 12: Protection of Fisheries

ECP 13: Road Transport and Road Traffic Management

ECP 14: Construction Camp Management

ECP 15: Cultural and Religious Issues

ECP 16: Workers Health and Safety

The Contractor can also prepare a 'Construction Environmental Action Plan' (CEAP) demonstrating the manner in which the Contractor will comply with the requirements of ECPs and the mitigation measures proposed in the ESMMP of the ESA Report. The CEAP will form the part of the contract documents and will be used as monitoring tool for compliance. Violation of the compliance requirements will be treated as non-compliance leading to the corrections or otherwise imposing penalty on the contractors.

## ECP 1: Waste Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| General Waste | Soil and water pollution from the improper management of wastes and excess materials from the construction sites. | The Contractor shall:<br>- Develop waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste etc.) prior to commencing of construction and submit to WAPDA for approval.<br>- Organize disposal of all wastes generated during construction in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact.<br>- Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach.<br>- Segregate and reuse or recycle all the wastes, wherever practical.<br>- Collect and transport non-hazardous wastes to all the approved disposal sites.<br>- Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process.<br>- Provide refuse containers at each worksite.<br>- Request suppliers to minimize packaging where practicable.<br>- Place a high emphasis on good housekeeping practices.<br>- Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all wastes before transportation and final disposal. |
| Hazardous Waste | Health hazards and environmental impacts due to improper waste management practices | The Contractor shall:<br>- Collect chemical wastes in 200 liter drums (or similar sealed container), appropriately labeled for safe transport to an approved chemical waste depot.<br>- Store, transport and handle all chemicals avoiding potential environmental pollution.<br>- Store all hazardous wastes appropriately in bunded areas away from water courses.<br>- Make available Material Safety Data Sheets (MSDS) for hazardous materials on-site during construction.<br>- Collect hydrocarbon wastes, including lube oils, for safe transport off-site for reuse, recycling, treatment or disposal at approved locations.<br>- Construct concrete or other impermeable flooring to prevent seepage in case of spills |

## ECP 2: Fuels and Hazardous Substance Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Fuels and hazardous goods. | Materials used in construction have a potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health of construction workers. | The Contractor shall:<br><br>- Prepare spill control procedures and submit the plan for WAPDA approval.<br>- Train the relevant construction personnel in handling of fuels and spill control procedures.<br>- Store dangerous goods in bunded areas on a top of a sealed plastic sheet away from watercourses.<br>- Refueling should occur only within bunded areas.<br>- Make available MSDS for chemicals and dangerous goods on-site.<br>- Transport waste of dangerous goods, which cannot be recycled, to a designated disposal site approved by EPA.<br>- Provide absorbent and containment material (e.g., absorbent matting) where hazardous material are used and stored and personnel trained in the correct use.<br>- Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use.<br>- Make sure all containers, drums, and tanks that are used for storage are in good condition and are labeled with expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur.<br>- Store hazardous materials above flood plain level.<br>- Put containers and drums in temporary storages in clearly marked areas, where they will not be run over by vehicles or heavy machinery. The area should preferably slope or drain to a safe collection area in the event of a spill.<br>- Put containers and drums in permanent storage areas on an impermeable floor that slopes to a safe collection area in the event of a spill or leak.<br>- Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution.<br>- Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly materials. |

## ECP 3: Water Resources Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Hazardous Material and Waste | Water pollution from the storage, handling and disposal of hazardous materials and general construction waste, and accidental spillage | The Contractor shall:<br><br>- Follow the management guidelines proposed in ECPs 1 and 2.<br>- Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways, storm water systems or underground water tables |
| Discharge from construction sites | During construction both surface and groundwater quality may be deteriorated due to construction activities in the river, sewerages from construction sites and work camps. The construction works will modify groundcover and topography changing the surface water drainage patterns, including infiltration and storage of storm water. The change in hydrological regime leads to increased rate of runoff and in sediment and contaminant loading, increased flooding, groundwater contamination, and effect habitat of fish and other aquatic biology. | The Contractor shall:<br><br>- Install temporary drainage works (channels and bunds) in areas required for sediment and erosion control and around storage areas for construction materials<br>- Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site<br>- Divert runoff from undisturbed areas around the construction site<br>- Stockpile materials away from drainage lines<br>- Prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport to a approved waste disposal site or recycling depot<br>- Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved bunded areas on site. Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This should be done in every exit of each construction vehicle to ensure the local roads are kept clean. |
| Soil Erosion and siltation | Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies. | The Contractor shall:<br><br>- Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion<br>- Ensure that roads used by construction vehicles are swept regularly to remove sediment.<br>- Water the material stockpiles, access roads and |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| | | bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds) |
| Construction activities in water bodies | Construction works in the water bodies will increase sediment and contaminant loading, and effect habitat of fish and other aquatic biology. | The Contractor shall:<br><br>- Dewater sites by pumping water to a sediment basin prior to release off site – do not pump directly off site<br>- Monitor the water quality in the runoff from the site or areas affected by dredge plumes, and improve work practices as necessary<br>- Protect water bodies from sediment loads by silt screen or bubble curtains or other barriers<br>- Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways, storm water systems or underground water tables.<br>- Use environment friendly and non-toxic slurry during construction of piles to discharge into the river.<br>- Reduce infiltration of contaminated drainage through storm water management design<br>- Do not discharge cement and water curing used for cement concrete directly into water courses and drainage inlets. |
| Drinking water | Groundwater at shallow depths might be contaminated and hence not suitable for drinking purposes. | The Contractor shall:<br><br>- Control the quality of groundwater to be used for drinking water on the bases of NEQS and World Bank standards for drinking water. Safe and sustainable discharges are to be ascertained prior to selection of pumps.<br>- Tube wells will be installed with due regard for the surface environment, protection of groundwater from surface contaminants, and protection of aquifer cross contamination<br>- All tube wells, test holes, monitoring wells that are no longer in use or needed shall be properly decommissioned |
| | Depletion and pollution of groundwater resources | - Install monitoring wells both upstream and downstream areas near construction yards and construction camps to regularly monitor and report on the water quality and water levels.<br>- Protect groundwater supplies of adjacent lands |

## ECP 4: Drainage Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Excavation and earth works, and construction yards | Lack of proper drainage for rainwater/liquid waste or wastewater owing to the construction activities harms environment in terms of water and soil contamination, and mosquito growth. | - The Contractor shall:<br>- Prepare a program for prevent/avoid standing waters, which EMSU will verify in advance and confirm during implementation<br>- Provide alternative drainage for rainwater if the construction works/earth-fillings cut the established drainage line<br>- Establish local drainage line with appropriate silt collector and silt screen for rainwater or wastewater connecting to the existing established drainage lines already there.<br>- Rehabilitate road drainage structures immediately if damaged by contractors' road transports.<br>- Build new drainage lines as appropriate and required for wastewater from construction yards connecting to the available nearby recipient water bodies. Ensure wastewater quality conforms to the relevant standards provided by EPA, before it being discharged into recipient water bodies.<br>- Ensure the internal roads/hard surfaces in the construction yards/construction camps that generate has storm water drainage to accommodate high runoff during downpour and that there is no stagnant water in the area at the end of the downpour.<br>- Construct wide drains instead of deep drains to avoid sand deposition in the drains that require frequent cleaning.<br>- Provide appropriate silt collector and silt screen at the inlet and manholes and periodically clean the drainage system to avoid drainage congestion<br>- Protect natural slopes of drainage channels to ensure adequate storm water drains.<br>- Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem.<br>- Reduce infiltration of contaminated drainage through storm water management design |
| Ponding of water | Health hazards due to mosquito breeding | - Do not allow ponding of water especially near the waste storage areas and construction camps<br>- Discard all the storage containers that are capable of storing of water, after use or store them in inverted position |

## ECP 5: Soil Quality Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Storage of hazardous and toxic chemicals | Spillage of hazardous and toxic chemicals will contaminate the soils | The Contractor shall:<br>- Strictly manage the wastes management plans proposed in ECP1 and storage of materials in ECP2<br>- Construct appropriate spill contaminant facilities for all fuel storage areas<br>- Establish and maintain a hazardous materials register detailing the location and quantities of hazardous substances including the storage, use of disposals<br>- Train personnel and implement safe work practices for minimizing the risk of spillage<br>- Identify the cause of contamination, if it is reported, and contain the area of contamination. The impact may be contained by isolating the source or implementing controls around the affected site<br>- Remediate the contaminated land using the most appropriate available method to achieve required commercial/industrial guideline validation results |
| Construction material stock piles | Erosion from construction material stockpiles may contaminate the soils | The Contractor shall:<br>- Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds |

## ECP 6: Erosion and Sediment Control

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Clearing of construction sites | Cleared areas and slopes are susceptible for erosion of top soils that affects the growth of vegetation which causes ecological imbalance. | The Contractor shall:<br>- Reinstate and protect cleared areas as soon as possible.<br>- Mulch to protect batter slopes before planting<br>- Cover unused area of disturbed or exposed surfaces immediately with mulch/grass turfings/tree plantations |
| Construction activities and material stockpiles | The impact of soil erosion are:<br><br>(i) Increased run off and sedimentation causing a greater flood hazard to the downstream, (ii) destruction of aquatic environment in nearby lakes, streams, and reservoirs caused by erosion and/or deposition of sediment damaging the spawning grounds of fish, and<br><br>(iii) destruction of vegetation by burying or gullying. | The Contractor shall:<br>- Locate stockpiles away from drainage lines<br>- Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds<br>- Remove debris from drainage paths and sediment control structures<br>- Cover the loose sediments and water them if required<br>- Divert natural runoff around construction areas prior to any site disturbance<br>- Install protective measures on site prior to construction, for example, sediment traps<br>- Control drainage through a site in protected channels or slope drains<br>- Install ‘cut off drains’ on large cut/fill batter slopes to control water runoff speed and hence erosion<br>- Observe the performance of drainage structures and erosion controls during rain and modify as required. |

## ECP 7: Borrow Areas Development & Operation

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Development and operation of borrow areas | In case, the borrow pits developed by the Contractor, there will be impacts on local topography, landscaping and natural drainage. | The Contractor shall:<br><br>- Reuse excavated or disposed material available in the project area to the maximum extent possible<br>- Identify borrow pits in consultation with the local governments and WAPDA.<br>- Obtain the borrow material from:<br>- barren land or land without tree cover outside the road reserve;<br>- Do not dug the borrow pits within 5m of the toe of the final section of the road embankment.<br>- Dig the borrow pits continuously. Ridges of not less than 8 m widths shall be left at intervals not exceeding 300 m and small drains should be cut through the ridges to facilitate drainage<br>- Slope the bed level of the borrow pits, as far as possible, down progressively towards the nearest cross drain, if any, and do not lower it than the bed of the cross-drain, to ensure efficient drainage.<br>- Follow the below for restoration of borrow areas are:<br>- Return stockpiled topsoil to the borrow pit if is used for agriculture;<br>- return stockpiled topsoil to the borrow pit and all worked areas to be stabilized through re-vegetation using local plants.<br>- Control at each site by ensuring that base of the borrow pit drains into a sediment trap prior to discharging from the site. |

## ECP 8: Air Quality Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Construction vehicular traffic | Air quality can be adversely affected by vehicle exhaust emissions and combustion of fuels. | The Contractor shall:<br>- Fit vehicles with appropriate exhaust systems and emission control devices, in compliance with the NEQS. Maintain these devices in good working condition.<br>- Operate the vehicles in a fuel efficient manner<br>- Cover haul vehicles carrying dusty materials moving outside the construction site<br>- Impose speed limits on all vehicle movement at the worksite to reduce dust emissions<br>- Control the movement of construction traffic<br>- Water construction materials prior to loading and transport<br>- Service all vehicles regularly to minimize emissions<br>- Limit the idling time of vehicles not more than 2 minutes |
| Construction machinery | Air quality can be adversely affected by emissions from machinery and combustion of fuels. | The Contractor shall:<br>- Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition.<br>- Focus special attention on containing the emissions from generators<br>- Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites<br>- Service all equipment regularly to minimize emissions |
| Construction activities | Dust generation from construction sites, material stockpiles and access roads is a nuisance in the environment and can be a health hazard. | - Water the material stockpiles, access roads and bare soils on an as required basis to minimize the potential for environmental nuisance due to dust. Increase the watering frequency during periods of high risk (e.g. high winds)<br>- Minimize the extent and period of exposure of the bare surfaces<br>- Reschedule earthwork activities or vegetation clearing activities, where practical, if necessary to avoid during periods of high wind and if visible dust is blowing off-site<br>- Restore disturbed areas as soon as practicable by vegetation/grass-turfing<br>- Store the cement in silos and minimize the emissions from silos by equipping them with filters. |

## ECP 9: Noise and Vibration Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Construction vehicular traffic | Noise quality will be deteriorated due to vehicular traffic | The Contractor shall:<br>- Maintain all vehicles in order to keep it in good working order in accordance with manufactures maintenance procedures<br>- Make sure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, etc. |
| Construction machinery | Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment. | The Contractor shall:<br>- Appropriately site all noise generating activities to avoid noise pollution to local residents<br>- Use the quietest available plant and equipment<br>- Modify equipment to reduce noise (for example, noise control kits, lining of truck trays or pipelines)<br>- Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures<br>- Install acoustic enclosures around generators to reduce noise levels.<br>- Fit high efficiency mufflers to appropriate construction equipment |
| Construction activity | Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment. | The Contractor shall:<br>- Notify adjacent residents prior to any typical noise event outside of daylight hours<br>- Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions<br>- Employ best available work practices on-site to minimize occupational noise levels<br>- Install temporary noise control barriers where appropriate<br>- Notify affected people if noisy activities will be undertaken, e.g. blasting<br>- Plan activities on site and deliveries to and from site to minimize impact<br>- Monitor and analyze noise and vibration results and adjust construction practices as required.<br>- Avoid undertaking the noisiest activities, where possible, when working at night near the residential areas |

## ECP 10: Protection of Flora

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Vegetation clearance | Local flora are important to provide shelters for the birds, offer fruits and/or timber/fire wood, protect soil erosion and overall keep the environment very friendly to human-living. As such damage to flora has wide range of adverse environmental impacts. | The Contractor shall:<br><br>- Reduce disturbance to surrounding vegetation<br>- Use appropriate type and minimum size of machine to avoid disturbance to adjacent vegetations.<br>- Get approval from supervision consultant for clearance of vegetation.<br>- Make selective and careful pruning of trees where possible to reduce need of tree removal.<br>- Control noxious weeds by disposing of at designated dump site or burn on site.<br>- Clear only the vegetation that needs to be cleared in accordance with the plans. These measures are applicable to both the construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill and construction of diversion roads, etc.<br>- Do not burn off cleared vegetation – where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping. Mulch provides a seed source, can limit embankment erosion, retains soil moisture and nutrients, and encourages re-growth and protection from weeds.<br>- Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same area of the roadside it came from.<br>- Avoid work within the drip-line of trees to prevent damage to the tree roots and compacting the soil.<br>- Minimize the length of time the ground is exposed or excavation left open by clearing and re-vegetate the area at the earliest practically possible.<br>- Ensure excavation works occur progressively and re-vegetation done at the earliest<br>- Provide adequate knowledge to the workers regarding nature protection and the need of avoid felling trees during construction<br>- Supply appropriate fuel in the work caps to prevent fuel wood collection |

## ECP 11: Protection of Fauna

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Construction activities | The location of construction activities can result in the loss of wild life habitat and habitat quality, | The Contractor shall:<br>- Limit the construction works within the designated sites allocated to the contractors<br>- check the site for animals trapped in, or in danger from site works and use a qualified person to relocate the animal |
| | Impact on migratory birds, its habitat and its active nests | The Contractor shall:<br>- Not be permitted to destruct active nests or eggs of migratory birds<br>- Minimize the tree removal during the bird breeding season. If works must be continued during the bird breeding season, a nest survey will be conducted by a qualified biologist prior to commence of works to identify and located active nests<br>- Minimize the release of oil, oil wastes or any other substances harmful to migratory birds to any waters or any areas frequented by migratory birds. |
| Vegetation clearance | Clearance of vegetation may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas | - The Contractor shall:<br>- Restrict the tree removal to the minimum required.<br>- Retain tree hollows on site, or relocate hollows, where appropriate<br>- Leave dead trees where possible as habitat for fauna<br>- Fell the hollow bearing trees in a manner which reduces the potential for fauna mortality. Felled trees will be inspected after felling for fauna and if identified and readily accessible will be removed and relocated or rendered assistance if injured. After felling, hollow bearing trees will remain unmoved overnight to allow animals to move of their own volition. |
| Construction camps | Illegal poaching | - Provide adequate knowledge to the workers regarding protection of flora and fauna, and relevant government regulations and punishments for illegal poaching. |

## ECP 12: Protection of Fisheries

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Construction activities in River | The main potential impacts to fisheries are hydrocarbon spills and leaks from boats and disposal of wastes into the river | - The Contractor shall:<br>- Ensure that boats used in the project are well maintained and do not have oil leakage to contaminate river water.<br>- Contain accidental spillage and make an emergency oil spill containment plan to be supported with enough equipments, materials and human resources<br>- Do not dump wastes, be it hazardous or non-hazardous into the nearby water bodies or in the river |
| Construction activities on the land | The main potential impacts to aquatic flora and fauna River are increased suspended solids from earthworks erosion, sanitary discharge from work camps, and hydrocarbon spills | - The Contractor shall:<br>- follow mitigation measures proposed in ECP 3 : Water Resources Management and EC4: Drainage Management<br>- |

## ECP 13: Road Transport and Road Traffic Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Construction vehicular traffic | Increased traffic use of road by construction vehicles will affect the movement of normal road traffics and the safety of the road-users. | The Contractor shall:<br><br>- Prepare and submit a traffic management plan to WAPDA for their approval at least 30 days before commencing work on any project component involved in traffic diversion and management.<br>- Include in the traffic management plan to ensure uninterrupted traffic movement during construction: detailed drawings of traffic arrangements showing all detours, temporary road, temporary diversions, necessary barricades, warning signs/lights, road signs, etc.<br>- Provide signs at strategic locations of the roads complying with the schedules of signs contained in the Pakistani Traffic Regulations.<br>- Install and maintain a display board at each important road intersection on the roads to be used during construction, which shall clearly show the following information in Urdu:<br>- Location: chainage and village name<br>- Duration of construction period<br>- Period of proposed detour/alternative route<br>- Suggested detour route map<br>- Name and contact address/telephone number of the concerned personnel<br>- Name and contact address/telephone number of the Contractor<br>- Inconvenience is sincerely regretted. |
| | Accidents and spillage of fuels and chemicals | - Restrict truck deliveries, where practicable, to day time working hours.<br>- Restrict the transport of oversize loads.<br>- Operate road traffics/transport vehicles, if possible, to non-peak periods to minimize traffic disruptions.<br>- Enforce on-site speed limit |

## ECP 14: Construction Camp Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Siting and Location of construction camps | Campsites for construction workers are the important locations that have significant impacts such as health and safety hazards on local resources and infrastructure of nearby communities. | The Contractor shall:<br>- Locate the construction camps at areas which are acceptable from environmental, cultural or social point of view.<br>- Consider the location of construction camps away from communities in order to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities.<br>- Submit to the PMU for approval a detailed layout plan for the development of the construction camp showing the relative locations of all temporary buildings and facilities that are to be constructed together with the location of site roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations, and drainage facilities, prior to the development of the construction camps.<br>- Local authorities responsible for health, religious and security shall be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters |
| Construction Camp Facilities | Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards. | Contractor shall provide the following facilities in the campsites:<br>- Adequate housing for all workers<br>- Safe and reliable water supply. Water supply from tube wells that meets the national standards<br>- Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage. Provide separate latrines and bathing places for males and females with total isolation by wall or by location. Female toilets should be clearly marked in language understood by the persons using them to avoid miscommunication. The minimum number of toilet facilities required is one toilet for every ten persons.<br>- Treatment facilities for sewerage of toilet and domestic wastes<br>- Storm water drainage facilities. Both sides of roads are to be provided with shallow v drains to drain off storm water to a silt retention pond which shall be sized to provide a minimum of 20 minutes retention of storm water flow from the whole site. Channel all discharge from the silt retention pond to natural drainage via a grassed |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| | | swale at least 20 meters in length with suitable longitudinal gradient.<br>- Paved internal roads. Ensure with grass/vegetation coverage to be made of the use of top soil that there is no dust generation from the loose/exposed sandy surface. Pave the internal roads of at least haring-bond bricks to suppress dusts and to work against possible muddy surface during monsoon.<br>- Provide child crèches for women working on the construction site. The crèche should have facilities for dormitory, kitchen, indoor/outdoor play area. Schools should be attached to these crèches so that children are not deprived of education whose mothers are construction workers<br>- Provide in-house community/common entertainment facilities. Dependence of local entertainment outlets by construction camps to be discouraged/prohibited to the extent possible. |
| Disposal of waste | Management of wastes is crucial to minimize impacts on the environment | The Contractor shall:<br>- Ensure proper collection and disposal of solid wastes within the construction camps<br>- Insist waste separation by source; organic wastes in one pot and inorganic wastes in another pot at household level.<br>- Store inorganic wastes in a safe place within the household and clear organic wastes on daily basis to waste collector. Establish waste collection, transportation and disposal systems with the manpower and equipments/vehicles needed.<br>- Dispose organic wastes in a designated safe place on daily basis. At the end of the day cover the organic wastes with a thin layer of sand so that flies, mosquitoes, dogs, cats, rats, are not attracted. One may dig a large hole to put organic wastes in it; take care to protect groundwater from contamination by leachate formed due to decomposition. Cover the bed of the pit with impervious layer of materials (clayey, thin concrete) to protect groundwater from contamination.<br>- Locate the garbage pit/waste disposal site min 500 m away from the residence so that peoples are not disturbed with the odor likely to be produced from anaerobic decomposition of wastes at the waste dumping places. Encompass the waste dumping place by fencing and tree plantation to prevent children to enter and play |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| | | with.<br>- Do not establish site specific landfill sites. All solid waste will be collected and removed from the work camps and disposed in approval waste disposal sites. |
| Fuel supplies for cooking purposes | Illegal sourcing of fuel wood by construction workers will impact the natural flora and fauna | The Contractor shall:<br>- Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuel wood or other biomass.<br>- Make available alternative fuels like natural gas or kerosene on ration to the workforce to prevent them using biomass for cooking.<br>- Conduct awareness campaigns to educate workers on preserving the protecting of biodiversity in the project area, and relevant government regulations and punishments on wildlife protection. |
| Health and Hygiene | There will be a potential for diseases to be transmitted including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading sexually transmitted infections and HIV/AIDS. | The Contractor shall:<br>- Provide adequate health care facilities within construction sites.<br>- Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint fulltime designated first aider or nurse.<br>- Provide ambulance facility for the laborers during emergency to be transported to nearest hospitals.<br>- Initial health screening of the laborers coming from outside areas<br>- Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work<br>- Provide HIV awareness programming, including STI (sexually transmitted infections) and HIV information, education and communication for all workers on regular basis<br>- Complement educational interventions with easy access to condoms at campsites as well as voluntary 134counseling and testing<br>- Provide adequate drainage facilities throughout camps to ensure that disease vectors habitats (stagnant water bodies, puddles) do not form. Regular mosquito repellant sprays in monsoon.<br>- Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers. Place display boards at strategic locations within the camps containing messages on best hygienic practices |
| Safety | In adequate safety facilities to the construction camps may | The Contractor shall:<br>- Provide appropriate security personnel (police / home guard or private security guards) and |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| | create security problems and fire hazards | enclosures to prevent unauthorized entry in to the camp area.<br>- Maintain register to keep track on a head count of persons present in the camp at any given time.<br>- Encourage use of flameproof material for the construction of labor housing/site office. Ensure that these houses/rooms are of sound construction and capable of withstanding storms/cyclones.<br>- Provide appropriate type of firefighting equipment suitable for the construction camps<br>- Display emergency contact numbers clearly and prominently at strategic places in camps.<br>- Communicate the roles and responsibilities of laborers in case of emergency in the monthly meetings with contractors. |
| Site Restoration | Restoration of the construction camps to original condition requires demolition of construction camps. | The Contractor shall:<br>- Dismantle and remove from the site all facilities established within the construction camp including the perimeter fence and lockable gates at the completion of the construction work.<br>- Dismantle camps in phases as the work decreases (do not wait for completion of the entire work.<br>- Give prior notice to the laborers before demolishing their camps/units<br>- Maintain the noise levels within the national standards during demolition activities<br>- Different contractors should be hired to demolish different structures to promote recycling or reuse of demolished material.<br>- Reuse the demolition debris to a maximum extent.<br>- Handover the construction camps with all built facilities as it is if agreement between both parties (contactor and land-owner) has been made so.<br>- Restore the site to its original condition or to an agreed condition with the landowner defined prior to the commencement of the works (in writing).<br>- Not make false promises to the laborers for future employment in O&M of the project. |

## ECP 15: Cultural and Religious Issues

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Construction activities near religious and cultural sites | Disturbance from construction works to the cultural and religious sites, and contractors lack of knowledge on cultural issues cause social disturbances. | The Contractor shall:<br>- Communicate to the public through community consultation and newspaper announcements regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restriction.<br>- Do not block access to cultural and religious sites, wherever possible<br>- Restrict all construction activities within the foot prints of the construction sites.<br>- Stop construction works that produce noise (particularly during prayer time) should there be any mosque/religious/educational institutions close to the construction sites and users make objections.<br>- Take special care and use appropriate equipment when working next to a cultural/religious institution.<br>- Stop work immediately and notify the site manager if, during construction, an archaeological or burial site is discovered. It is an offence to recommence work in the vicinity of the site until approval to continue is given by the PMU<br>- Provide separate prayer facilities to the construction workers.<br>- Show appropriate behavior with all construction workers especially women and elderly people<br>- Allow the workers to participate in praying during construction time<br>- Resolve cultural issues in consultation with local leaders and supervision consultants<br>- Establish a mechanism that allows local people to raise grievances arising from the construction process.<br>- Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works so as to maintain effective surveillance over public health, social and security matters |

## ECP 16: Worker Health and Safety

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Best practices | Construction works may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to a number of (i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc), (ii) risk factors resulting from human behavior (e.g. STD, HIV etc) and (iii) road accidents from construction traffic. | The Contractor shall:<br>- Implement suitable safety standards for all workers and site visitors which should not be less than those laid down on the international standards (e.g. International Labor Office guideline on 'Safety and Health in Construction; World Bank Group's 'Environmental Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with the national acts and rules of the Government of Pakistan<br>- Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular construction activity and specific classes of hazards in the work areas,<br>- Provide personal protection equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones.<br>- Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job<br>- Appoint an environment, health and safety manager to look after the health and safety of the workers<br>- Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works and establishment of construction camps so as to maintain effective surveillance over public health, social and security matters |
| | Child and pregnant labor | - The Contractor shall:<br>- not hire children of less than 14 years of age and pregnant women or women who delivered a child within 8 preceding weeks, in accordance with the Pakistani Labor Laws and Employment of Child Act (1977). |
| Accidents | Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims | - Provide health care facilities and first aid facilities are readily available. Appropriately equipped first-aid stations should be easily accessible throughout the place of work<br>- Document and report occupational accidents, diseases, and incidents. |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| | | - Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice.<br>- Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures.<br>- Provide awareness to the construction drivers to strictly follow the driving rules<br>- Provide adequate lighting in the construction area and along the roads |
| Construction Camps | Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards. | The Contractor shall provide the following facilities in the campsites to improve health and hygienic conditions as mentioned in ECP 14 Construction Camp Management:<br>- Adequate ventilation facilities<br>- Safe and reliable water supply. Water supply from deep tube wells that meets the national standards<br>- Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage.<br>- Treatment facilities for sewerage of toilet and domestic wastes<br>- Storm water drainage facilities.<br>- Recreational and social facilities<br>- Safe storage facilities for petroleum and other chemicals in accordance with ECP 2<br>- Solid waste collection and disposal system in accordance with ECP1.<br>- Arrangement for trainings<br>- Paved internal roads.<br>- Security fence at least two m height.<br>- Sick bay and first aid facilities |
| Water and sanitation facilities at the construction sites | Lack of Water sanitation facilities at construction sites cause inconvenience to the construction workers and affect their personal hygiene. | - The contractor shall provide portable toilets at the construction sites, if about 25 people are working the whole day for a month. Location of portable facilities should be at least six m away from storm drain system and surface waters. These portable toilets should be cleaned once a day and all the sewerage should be pumped from the collection tank once a day and should be brought to the common septic tank for further treatment.<br>- Contractor should provide bottled drinking water facilities to the construction workers at all the construction sites. |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|---|---|---|
| Other ECPs | Potential risks on health and hygiene of construction workers and general public | The Contractor shall follow the following ECPs to reduce health risks to the construction workers and nearby community:<br><br>- ECP 2: Fuels and Hazardous Goods Management<br>- ECP 4: Drainage Management<br>- ECP 8: Air Quality Management<br>- ECP 9: Noise and Vibration Management<br>- ECP 13: Road Transport and Road Traffic Management |
| Trainings | Lack of awareness and basic knowledge in health care among the construction workforce, make them susceptible to potential diseases. | The Contractor shall:<br><br>- Train all construction workers in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of sexually transmitted infections (STI) HIV/AIDS.<br>- Train all construction workers in general health and safety matters, and on the specific hazards of their work Training should consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate.<br>- Commence the malaria, HIV/AIDS and STI education campaign before the start of the construction phase and complement it with by a strong condom marketing, increased access to condoms in the area as well as to voluntary counseling and testing.<br>- Implement malaria, HIV/AIDS and STI education campaign targeting all workers hired, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter pursued throughout the construction phase on ongoing and regular basis. This should be complemented by easy access to condoms at the workplace as well as to voluntary counseling and testing. |

# Annexure-3: Flood Resistant Design Guideline

***Any proposed development in the regulated floodplain must be consistent with the need to minimize flood damage.*** This can be accomplished, in part, by using materials, equipment, and construction techniques that are resistant to flood damage in locations that would be wet during a 100-year flood.

- New construction and substantially improved structures (including accessory structures): It is required that materials and equipment located below the flood protection level (and outside of dry flood proofed areas) be resistant to flood damage. This may apply to foundations, floor beams, joists, enclosures, and equipment servicing the building (electrical, plumbing, mechanical, ducts, etc.).
- Non-substantial improvements to existing (pre-FIRM) buildings and non-building development: New and replacement electrical, plumbing, and mechanical equipment must be located or designed to resist flood damage. The entire project should utilize flood resistant design, materials, and practices to the greatest extent practical.

Floodplain areas can be subjected to hydrostatic (standing water) and hydrodynamic (flowing water) pressures during floods. These pressures can result in displaced foundation walls, collapsed structures, floating fuel tanks, scouring, and other damage. Flood resistance thus requires that structural and non-structural components be durable, resistant to flood forces (including buoyancy), and resistant to deterioration caused by inundation with floodwater. Options that require emergency operation (such as shutting off electricity or removing vulnerable components) should be avoided if possible, particularly in areas subject to flash flooding. "Flood resistant" is not "dry floodproofing" of non-residential structures.

**Flood Damage-Resistant Building Materials**

It is important that all parts of a building or other project that are susceptible to flooding (including fasteners and connectors) be made of materials that are resistant to flood damage. "Flood-resistant materials" include any building product capable of withstanding direct and prolonged contact with floodwaters without sustaining significant damage. "Prolonged contact" means at least 72 hours, and "significant damage" is any damage requiring more than cleaning or low-cost cosmetic repair (such as painting). The need to replace flood damaged drywall or other material is considered "significant damage" and is thus not acceptable. Components that are not inundated should be resistant to excessive humidity.

Flood damage-resistant materials include:

- Glazed brick, concrete, concrete block, glass block or stone (with waterproof mortar or grout);
- Steel trusses, headers, beams, panels, or hardware;
- Naturally decay resistant lumber, recycled plastic lumber, or marine grade plywood;
- Clay, concrete, rubber, or steel tiles (with chemical-set or waterproof adhesives);
- Cement board;
- Metal doors, cabinets, and window frames;
- Mastic, silicone, or polyurethane formed-in-place flooring;
- Sprayed polyurethane foam or closed-cell plastic foam insulation;
- Water-resistant glue; and
- Polyester epoxy paint (mildew-resistant paint contains toxic ingredients and should not be used indoors).

**Anchoring**
Foundations, equipment, accessory structures, and other components located below the flood protection level must be firmly anchored to resist flotation, collapse, and lateral movement.

**Mechanical, Plumbing, and Electrical Systems**
Location above the flood protection level is generally the best way to protect service equipment, such as heating, ventilating, air conditioning, plumbing appliances, plumbing fixtures, duct systems, and electrical equipment (service panels, meters, switches, and outlets). If these components are at a lower level, they must be designed to prevent damage from flooding. This may involve waterproof enclosures, barriers, protective coatings, or other techniques to protect vulnerable components. The municipality may require certification from a licensed professional that the standards for resistance to flood damage are met.

**Backflow and Automatic Shut-Off Valves**
Flooding can cause sewage from sanitary sewer lines to back up into buildings through drain pipes, causing both damage and health hazards. Backflow valves are designed to temporarily block pipes and prevent flow into the building and should be installed on any pipes that leave the building or are connected to equipment located below the flood protection level. In addition to sanitary sewer and septic connections, this may include water lines, washing machine drain lines, laundry sinks, downspouts, and sump pumps. Fuel supply lines must be equipped with float operated automatic shut-off valves.

**Storage Tanks**
Unanchored fuel tanks can be easily moved by flood waters, posing a serious threat of contamination and other damage. Even a buried tank can be pushed to the surface by buoyant effects. A tank can be anchored by attaching it to a concrete slab that is heavy enough to resist the force of flood waters or by running straps over it and attaching them to ground anchors. Tanks and other containers should have watertight fill caps, vents that extend above the flood protection level, and accurate labeling of contents (so that emergency personnel know what it contains if the tank breaks loose and floats away).

**Additional Resources**
- *Wet Flood proofing Requirements for Structures Located in Special Flood Hazard Areas*, Technical Bulletin 7-93, FEMA FIA-TB-7 (1993), available at http://www.fema.gov/library/viewRecord.do?id=1720, includes planning, safety, and engineering considerations for wet flood proofing.
- *Flood Damage-Resistant Materials Requirements for Buildings Located in Special Flood Hazard Areas*, Technical Bulletin 2, FEMA FIA-TB-2 (2008), available at http://www.fema.gov/library/viewRecord.do?id=1580, includes lists of acceptable materials for flood-resistant construction.
- *Protecting Building Utilities from Flood Damage: Principles and Practices for the Design and Construction of Flood Resistant Building Utility Systems*, FEMA 348 (1998), available at http://www.fema.gov/hazard/flood/pubs/pbuffd.shtm. This publication provides technical guidance for the design and construction of flood-resistant utility systems, including HVAC systems, fuel systems, electrical systems, sewage management systems, and potable water systems.
- *Elevator Installation for Buildings Located in Special Flood Hazard Areas*, Technical Bulletin 4-93, FEMA FIA-TB-4 (1993), available at http://www.fema.gov/library/viewRecord.do?id=1717. Provides guidance concerning the installation of elevators below the Base Flood Elevation.
- *Flood-Resistant Design and Construction*, American Society of Civil Engineers (ASCE) 24-05, purchase at www.asce.org, highlights available at http://www.fema.gov/library/viewRecord.do?id=3515. ASCE 24 is a referenced standard in the NYS Building Code and the NYS Residential Code. Buildings designed according to ASCE 24 are better able to resist flood loads and flood damage

# Annexure-4: Asbestos Handling Guidelines

**Guidelines Asbestos and Asbestos Based Product use during Construction**

Asbestos is a group of naturally occurring fibrous silicate minerals. It was used widely in the production of many industrial and household products because of its useful properties, including fire retardation, electrical and thermal insulation, chemical and thermal stability, and high tensile strength[4].

Asbestos based products include Asbestos –Cement (A-C) construction materials such as A-C flat and corrugated sheets, A-C pipe, and A-C water storage tanks. Over 90% of the asbestos fiber produced today is chrysotile which is found in these products. Vehicle brake, clutch pads, roofing and gaskets are some other products that are still being manufactured with asbestos content. Due to international laws banning the use of asbestos, it is hardly used in construction materials other than asbestos –cement products. However, it is still found in older buildings in the form of friable surfacing materials, thermal system insulations, non-friable flooring materials, and other applications. In Pakistan asbestos roofing sheets and asbestos containing pipes are widely used as it is the most cost effective and durable material given climate, environment and other factors.

**Ban on Asbestos Use:**

As health risks related to exposure to asbestos is widely known, many countries have banned the commercial use of asbestos. The International Labor Organization (ILO) established an Asbestos Convention (C162) in 1986 to promote national laws and regulations for the "prevention and control of, and protection of workers against, health hazards due to occupational exposure to asbestos". As of March 4, 2008, 31 countries had ratified the Convention, 17 of them have banned asbestos use. ILO asbestos convention requirements include:

- Work clothing to be provided by employers,
- Double changing rooms and wash facilities to prevent dust from going home on street clothes, Training of workers about the health hazards to themselves and their families,
- Periodic medical examinations of workers,
- Periodic air monitoring of the work environment, with records retained for 30 years,
- Development of a work plan for demolition work, to protect workers and provide for proper waste disposal, and
- Protection from retaliatory and disciplinary measures of workers who remove themselves from work that they are justified in believing presents a serious danger to health.

**Health Risks:**

Health hazards from breathing asbestos dust include:

- Asbestosis – a lung scarring disease
- Form of cancer such as mesothelioma.

The main risks of exposure from asbestos is where fibers are easily made air borne under little pressure, such as cutting of asbestos containing products that can release fibers. Risks are from construction materials that need to be altered, repaired and disposed of that may release particles into the air, and increase the risk of inhalation. Renovations, repairs and decommission of buildings containing asbestos products such as roof sheets or pipes can pose a risk. However, in the case of Asbestos –Cement (AC) corrugated sheets and asbestos containing pipes, the fiber is present in the non- friable form which means that fiber is embedded in cement or piping materials and cannot be easily air-borne. Such materials are known to have little health risk once (a) the roof/piping has been completed and (b) given that material is in good condition and not disturbed[8]. Although IDA Group's Good Practice Note on Asbestos , and its Health and Safety Guidelines do not encourage the use of asbestos products in construction, in light of the practical uses for construction of school infrastructure, the costs, its availability in local markets and lack of feasible alternatives, the use of asbestos is the most feasible option. However, to minimize the health risks that asbestos products do pose, the following guidelines adapted from the World Bank's Health and Safety Guidelines and other sources are recommended to be followed. As Pakistan has no regulations regarding the use of Asbestos, the use of ILO convention guidelines as stated above are recommended as well.

**Construction phase:**

- To minimize the risk of damage of A-C sheets for roofing and asbestos containing pipes, transportation of material must be done with care. Where possible, Asbestos Containing Materials (ACMs) should be transported in airtight containers or with dust covers.
- During installation of roof/pipes, ensure that damage to the existing ACMs is avoided. Use of power tools to drill holes that may release particles needs to be kept to the minimum.
- Workers who are involved in handling and installing A-C sheets and pipes should take precautions to minimize exposure by wearing protective masks and showering to minimize spread of dust. Work clothes used during the installation of sheets should be washed and workers change to clean clothes before leaving construction site.
- Workers should be made aware of the risks of A-C sheets and asbestos containing pipes, and how to minimize these risks.
- The installation of ACMs in the new buildings is prohibited

**Post Construction/De-Commissioning:**

- Contractors should dispose of waste containing asbestos in a manner that does not pose a health risk to the workers concerned or the population in the vicinity. Disposal

at approved landfills and prompt burial under various levels of material apply to friable asbestos waste. Contractors should consult the Local Authority and Central Environmental Authority to obtain guidance on proper disposal of material.

- Contractor should be encouraged to develop an asbestos management plan that identifies the content (whether it is in friable form and has potential to release fibers), and proper removal procedures.
- During the removal of A-C sheets and asbestos containing pipes, workers should wear proper protective gear such as masks and shower to prevent the spread of dust. Clothes worn during this process should be washed and workers should change into clean clothes prior to leaving construction site.
- Workers who are, or have been, exposed to asbestos in their occupational activities should be provided, in accordance with national laws and practices, with such medical examinations as are necessary to supervise their health in relation to the occupational hazard, and to diagnose occupational diseases caused by exposure to asbestos. For the prevention of disease and functional impairment related to exposure to asbestos, all workers assigned to work involving asbestos exposure should be provided with:

- a pre-assignment medical examination;
- periodic medical examinations at appropriate intervals (at least every 3 years);
- other tests and investigations, in particular chest radiographs and lung function test, which may be necessary to supervise their state of health in relation to the occupational hazard and to identify early indicators of disease caused by asbestos;
- a copy of their medical record.
- The above requirements will be based on the type of construction and its magnitude.

# Annexure-5: Physical Cultural Resource (PCR) Management Framework and Chance Find procedures

## A. The PCR Management Framework

The PCR Management Plan can constitute a section of the Environmental Management Plan, if one is required. The Management Plan should clearly:

- Schedule the implementation of the proposed PCR mitigating measures and PCR monitoring, if any, taking into account the weather pattern, and identify roles and responsibilities for such implementation;
- Identify procedures for handling chance finds, including the role and responsibilities of the cultural authorities and the contractor; and
- Identify procedures for addressing PCR impacts which may occur during implementation but were not predicted in the impact assessment.

The following are the main considerations guiding the preparation of the PCR Management Plan.

### 1. Policy, Legal and Regulatory Framework

This section should contain reference to the following, including identification of any implications for the PCR component of the ESMP, such as special standards or requirements:

- The World Bank's EA policy OP/BP 4.01 and the PCR policy OP/BP 4.11;
- Sections of national EIA laws, regulations and guidelines relating to PCR;
- Sections of the national environmental conservation strategy, if any, relating to PCR;
- Legislation and regulations relating to:
    - Antiquities, including sale and export;
    - Procedures for addressing chance finds, in terms of ownership and requirements by the contractor and cultural authorities;
    - Archaeology, including the issue of permits.
- Relevant authorities charged with PCR identification, protection and management, their powers, the legal basis for their authority, and their actual capacity;
- PCR-related conventions and treaties to which the borrower country is signatory;
- Sites in the borrower country currently listed by other international agency in the field of PCR such as the World Monuments Fund, or ICOMOS, as being of national or international importance;
- Any national or provincial registers of PCR maintained by accredited authorities in the borrower country.

## 2. Project Description

The project description should detail construction and operation phases, including maps, diagrams and plans of planned activities. The description should take into consideration any potential impacts on PCR of planned activities, construction/rehabilitation processes, transport arrangements, etc.

## 3. Analysis of Alternatives

In cases where there are major PCR issues, the analysis of alternatives should consider alternative project sites or technologies that could specifically avoid or minimize those impacts on PCR.

## 4. Baseline Data

The baseline data should begin with an investigation and inventory of PCRs likely to be affected by the project. The data should consider all types of PCR that might be impacted, covering:

- Living-culture PCR, as well as historical, archaeological and paleontological PCR;
- Natural and human-made PCR;
- Movable and immovable PCR;
- Unknown or invisible PCR.

The data collection activity should involve consultations with concerned parties and potentially affected communities. Potential data sources might include cultural authorities, national or provincial PCR registers, universities and colleges, public and private PCR-related institutions, religious bodies and local PCR NGOs. Sources at the community level typically include, for example, community leaders and individuals, schools, religious leaders, scholars, PCR specialists, and local historians.

The baseline data section should include maps showing PCR baseline data within the potential impact areas. In addition, data should detail the cultural significance or value attributed by the concerned or affected parties to the PCR identified in the baseline. Consultation is a particularly important means of identifying PCR and documenting their presence and significance. This will normally not be expressed in monetary terms, but rather should explain the nature of the cultural significance, for example whether it is religious, ethnographic, historic, or archaeological. In the case of PCR of archaeological, architectural, paleontological or other scholarly or scientific value, the PCR Management Plan should provide an assessment of the relative importance of the PCR in this regard locally, nationally and/or internationally.

## 5. Impact Assessment

PCR should be included in the impact matrix and PCR impacts for each project stage – construction/rehabilitation, operation, etc. – should be detailed. The PCR Management Plan should specifically describe the nature and extent of the potential impacts and state precisely why they are considered to be significant or insignificant. The impact assessment should also consider the possibility of accidents during construction/rehabilitation and operations which might affect PCR, especially in urban settings, which might call for special precautionary measures.

## 6. Mitigation Measures

It is particularly important that consultations with concerned and affected parties are conducted on the proposed mitigation measures relating to PCR impacts. Agreements must be reached and evidence of such agreements should be included in PCR Management Plan. It should be checked whether the recommended mitigation measures might themselves have environmental impacts (e.g. archaeological excavations). PCR Management Plan should detail the cost of implementing and the timing of the recommended PCR mitigation measures.

## B. Chance Find Procedures

Chance find procedures which will be used during this Project are as follows:

- Stop the construction activities in the area of the chance find;
- Delineate the discovered site or area;
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities and the Ministry in charge of Department of Archaeology take over;
- Notify the supervisory Engineer who in turn will notify the responsible local authorities and the Ministry immediately (within 24 hours or less);
- Responsible local authorities and the Ministry in charge of Department of Archaeology would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archeologists of the Department of Archaeology and Museums (within 72 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values;
- Decisions on how to handle the finding shall be taken by the responsible authorities and the Ministry in charge of Department of Archaeology. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration and salvage;
- Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the Ministry in charge of Department of Archaeology; and
- Construction work could resume only after permission is given from the responsible local authorities and the Ministry in charge of Department of Archaeology concerning safeguard of the heritage.

These procedures must be referred to as standard provisions in construction contracts, when applicable. During project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered or observed.

# Annexure-6: Project Proposals Evaluation criteria and Scoring Sheet- Gender and Inclusion (Technical)

| Parameters | Evaluation criteria | Score |
|---|---|---|
| **Project Beneficiaries** | (a) The project is targeting the vulnerable[73] groups.<br>(b) The project provides direct beneficiaries' gender and age disaggregated data.<br>(c) Women are primary beneficiaries of the project? | |
| | The project proposal meets all the three conditions. | **5** |
| | The project proposal meets the condition (a) and one of the remaining two (b) and (c) conditions. | **3** |
| | The project proposal meets any one of the three conditions. | **1** |
| | The project proposal does not meet any of the three conductions. | **0** |
| **Project Gender Action Plan** | (a) The project proposal includes a Gender Action Plan (GAP).<br>(b) The GAP is mainstreamed in the results framework.<br>(c) The GAP addresses women practical[74] and strategic[75] needs. | |
| | The project proposal meets all the three conditions. | **5** |
| | The project proposal meets any two of the three conditions. | **3** |
| | The project proposal meets any one of the three conditions. | **1** |
| | The project proposal does not meet any of the three conductions. | **0** |
| **Proposed Project Implementation** | (a) The project proposal explains how gender results/activities would be monitored.<br>(b) The technical team of the organization includes expertise regarding implementing gender inclusive project/s.<br>(c) Resources are allocated for the implementation of the GAP/reach out women. | |
| | The project proposal meets all the three conditions. | **5** |
| | The project proposal meets the condition (a) and one of the remaining two (b) and (c) conditions. | **3** |
| | The proposal meets any one of the three conditions. | **1** |
| | The proposal does not meet any of the three conductions. | **0** |
| **Documentation of Gender Results & Knowledge Sharing** | (a) The project plans to collect evidence against gender results.<br>(b) The project plans to develop knowledge products on gender related good practices.<br>(c) The project dissemination strategy includes sharing of gender specific knowledge. | |
| | The project proposal meets all the three conditions. | **5** |
| | The project proposal meets the condition (a) and one of the remaining two (b) and (c) conditions. | **3** |
| | The project proposal meets any one of the three conditions. | **1** |
| | The proposal does not meet any of the three conductions. | **0** |

[73] Vulnerable groups are persons living below poverty line with limited capacity and access to resources to bear shocks of disasters; gender, especially poor women, widows, female headed households, pregnant women, adolescent girls, children, older persons and persons with disabilities. (National Policy Guidelines on Vulnerable Groups in Disasters, NDMA, 2014), indigenous peoples, transgender, religious and ethnic minorities etc.

[74] The immediate needs identified by women to assist their survival in their socially accepted roles, within existing power structures, such as ensuring that women and their families' health care and food provision, access to safe water and sanitation, but also seek to ensure access to income-earning opportunities. (Gender Planning in the Third World: Meeting Practical and Strategic Gender Needs', World Development, Vol. 17, No. 2. Moser 1989)

[75] Those needs identified by women that require strategies for challenging male dominance and privilege, that may relate to inequalities in the gender division of labour, in ownership and control of resources, in participation in decision-making, or to experiences of domestic and other sexual violence. (Gender Planning in the Third World: Meeting Practical and Strategic Gender Needs', World Development, Vol. 17, No. 2. Moser 1989)

# Annexure-7: Guidelines for Gender Mainstreaming Categorization

## Gender Mainstreaming Categorization of NDRMF Funded Projects

The National Disaster Risk Management Fund (the Fund, NDRMF) is a rights based organization[76]. It is working for reducing the socio-economic and fiscal vulnerability of the country and its population, including all genders, children and elders, religious and ethnic minorities, indigenous people, and persons with disability (PWDs) to natural hazards by prioritizing and financing investments in disaster risk reduction and preparedness that have high economic benefits, taking into account climate change, as well as disaster risks and their impacts.

Gender equality and social inclusion is placed at the core of all NDRMF operations. The *Gender and Development Policy 2018* of the NDRMF adopts gender mainstreaming and inclusiveness as a key strategy for promoting gender equality and social inclusion in NDRMF operations. Depending on the type of intervention and scope of activities, the degree to which gender dimensions are relevant and can be integrated into a project[77] may vary. The categorization[78] system has been designed to categorize NDRMF financed projects on the basis of their expected contribution to gender equality within the context of building resilience against natural disasters. This system defines, clarifies and makes the process of gender mainstreaming and inclusiveness more tangible. The Quality Assurance Group (QAG) and respective FIP through deliberation assign a gender mainstreaming category to the project at concept/proposal development stage. It enables NDRMF and respective Fund Implementing Partner (FIP) to measure, count, and report on the extent to which gender equality and social inclusion related issues are mainstreamed into project design and management cycle.

On the basis of expected contribution to gender equality, projects can be classified under anyone of the following four categories:

| | |
|---|---|
| **Category I:** | **Gender Equity as a Theme (GET)** |
| **Category II:** | Effective Gender Mainstreaming (EGM) |
| **Category III:** | Some Gender Elements (SGE) |
| **Category IV:** | No Gender Elements (NGE) |

## Gender Mainstreaming Categorization & Requirements

| Category | Definition | Requirement |
|---|---|---|
| ***Category I: Gender Equity as a Theme (GET)*** | This category includes projects that state gender equality, empowerment and social inclusion as their ***principal outcome*** by narrowing disparities – changing condition and position of women and men, and inclusive groups[79]. This means that the entire project outcome is gender equality and empowerment of marginalized/vulnerable groups. Such project targets differential needs of men and women and | ➢ Conduct gender analysis[81] during design phase;<br>➢ Project key results clearly define gender and social inclusion issue(s);<br>➢ Develop a gender action plan (GAP) with gender and inclusive design features[82] including, targets and gender indicators to monitor[83] gender equality and social inclusion results;<br>➢ Design gender and social inclusion focused outputs and activities to address identified gender and social inclusion issue(s); |

[76] A rights-based organization applies human rights values and principles at all levels through its policies and practices.
[77] The term refers to NDRMF financed project (s) aiming to build resilient communities and institutions against natural disasters.
[78] Categorization is based upon *ADB's GUIDELINES FOR GENDER MAINSTREAMING CATEGORIES OF ADB PROJECTS*
[79] Children and elders, religious and ethnic minorities, indigenous people, and PWDs

| | | |
|---|---|---|
| | directly contributes to achieving gender [80] groups' practical and strategic needs. | ➢ Budget totally planned for achieving gender equality and empowerment;<br>➢ Gender team responsible to manage the GAP; and<br>➢ Key project personnel have gender and social inclusion related expertise.<br>➢ A covenant or a condition in the Grant Implementation Agreement (GIA) to support implementation of the GAP. |
| ***Category II: Effective Gender Mainstreaming (EGM)*** | Projects that fall into this category are expected to ***significantly*** contribute to gender equality, empowerment and social inclusion. Such projects outcome is not gender equality, but project outputs are designed to directly improve access to services, and/or economic and financial resources and opportunities, and/or infrastructure/structural and non-structural mitigation interventions, and/or enhancing voices and rights. The project is expected to analyse the differential needs, roles, challenges and opportunities of gender and inclusive groups within scope of the project. Such project ensures that all vulnerable groups equally participate in project implementation and decision-making processes and equally access project's resource, services, initiatives and benefits. | ➢ Consult and/or involve gender and inclusive groups, organisations or stakeholders during project design phase;<br>➢ Conduct gender analysis during project inception phase;<br>➢ Develop a gender action plan (GAP) with gender and inclusive design features;<br>➢ GAP includes gender and social inclusion responsive targets, indicators and a baseline to monitor gender equality and social inclusion results;<br>➢ Design activities to address identified gender and social inclusion issue(s);<br>➢ Most of the outputs should have at least 3 gender design features and targets;<br>➢ Gender targets and performance and monitoring indicators should be part of project RF; and<br>➢ *Project Design and Management Framework* includes collection of disaggregated data by age and gender, geography, disability and ethnic and religious affiliation;<br>➢ At least one Gender Expert is on-board on full time basis to manage implementation arrangements; and<br>➢ A covenant or a condition in the Grant Implementation Agreement (GIA) to support implementation of the GAP in light of GAD. |
| ***III. Some Gender & Social Inclusion Elements*** | Projects that fall into this category are expected to contribute to gender equality, empowerment and social inclusion in a ***limited way*** and have a limited potential for gender mainstreaming. Gender equality, empowerment and social inclusion is not an | ➢ Design activities to address identified gender and social inclusion related matters falling within the scope of the project;<br>➢ At least one indicator in each project output refers to gender in some way Consult and/or involve gender and inclusive groups during and after |

[81] Gender analysis is a critical examination of how differences in gender roles, activities, needs, opportunities and rights affect men, women, girls and boys in certain situation or contexts. Gender analysis examines the relationships between females and males and their access to and control of resources and decision making as well as those constraints they face relative to each other.

[82] Includes collection of gender and inclusion disaggregated data on participation, representation and beneficiaries; gender and inclusive group responsive physical infrastructure; policy, institutional reforms for gender equality and inclusive groups; empowerment measures; gender and inclusion related capacity development and creation of employment opportunities for women and inclusive group

[83] Includes collection and analysis of gender, inclusive groups & age disaggregated data and qualitative information to understand the differential needs, roles, challenges and opportunities for gender and inclusive groups and to track gender & inclusiveness impacts of the project

[80] women irrespective of any special ability or disability, religious affiliation, cast, creed and geographic location

| | | |
|---|---|---|
| | outcome. The project is unlikely to directly improve social, economic or financial resources or opportunities for the vulnerable groups, but significant efforts made during project preparation to identify potential positive and negative impacts on vulnerable groups.<br><br>Some gender features are included to enhance benefits to women (for example targets for employment of women in project construction work, provision of equal pay for equal work etc.); and where resettlement is involved includes attention to women in the mitigation/resettlement plans (such as compensation payments to both men and women, joint-ownership of land/housing, restoration of livelihood initiatives for women, and so forth). | project design;<br>➢ *Project Design and Management Framework* includes collection of disaggregated data by age and gender, geography, disability and ethnic and religious affiliation;<br>➢ Facilitate and ensure participation and access to project benefits by gender and inclusive groups; and<br>➢ *Project Design and Management Framework* includes collection of disaggregated data by age and gender, geography, disability and ethnic and religious affiliation. |
| ***IV. No Gender & Social Inclusion Elements*** | A project is assigned "*no gender elements*" when it does not include any gender design features. | ➢ Include description of why the project is not expected to noticeably contribute to gender equality, empowerment and social inclusion. For example, the project does not have direct contact with communities or the project does not directly affect or determine the use of resources, goods, or services accessed by gender or inclusive group; however, NDRMF does not accept such projects for financing. |

# Annexure-8: Sample Terms of Reference

## Environmental Safeguards Specialist

One Environmental Safeguards Specialist will be based in IP's office of the sub-project

**Tasks:** Environmental Safeguards Specialist will be responsible for the following duties and responsibilities relevant to project environmental safeguards compliances and mitigation measures

**Objective:**

Provide expert support to executing agencies in the office and field, provide support to implement activities related to the project components for compliance to environmental safeguards and mitigation measures.

**Main responsibilities are:**

- Deal with environmental aspects of the project and provide feedback to the Project Director on implementation of environmental action plan under the activities of the project.
- Support in compliance of the credit conditions and covenants pertaining to Environmental Safeguards.
- Update in Implementation of Environmental aspects of the project.
- Oversee environmental monitoring of the ESMF and site specific ESMPs
- Provide technical support to works consultants in the development of site specific ESMPs
- Coordinate with works contractors for onsite implementation of ESMPs.
- Organize and conduct the trainings on ESMF and ESMP compliances as proposed in mitigation plan.
- Prepare monthly, quarterly progress reports of Environment and Social Management Framework (ESMF).
- Prepare final progress report of the ESMF and submit to NDRMF.
- Ensure the HSE compliance onsite by the civil works consultants / contractor at project sites.
- Coordinate and conduct Environmental Field Monitoring visits of Project Areas.
- Review and revision of documents and ensuring timely delivery of outputs as agreed between The World Bank and NDRMF.
- As and when required contribute to the ongoing activities of the safeguard unit.
- Assist the Project Director in routine office matter when require.
- Work as the focal point for World Bank to provide necessary requirements of environmental compliances within the project.

**Academic Qualification:**

Post Graduate degree in Environmental Sciences with 5-8 years of relevant work experience in dealing with Environmental management and implementation in development projects.

## Salary and Benefits:

IPs will decide as per their rules and regulations for the project

**Duration:** Till project duration

## Social Safeguards Specialist

One Social Safeguards Specialist will be based in IPs office of sub-project.

**Tasks:** Social Safeguards Specialist will be responsible for the following duties and responsibilities relevant to project social safeguards compliances and mitigation measures

**Objective:**

Provide expert support to executing agencies in the office and field, provide support to implement activities related to the project components for compliance to social safeguards and mitigation measures.

**Main responsibilities are:**

- Deal with social aspects of the project and provide feedback to the Project Director on implementation of RPF, GRM and social safeguards under the activities of the project.
- Support in compliance of the conditions and covenants pertaining to Social Safeguards.
- Oversee social monitoring of the ESMF and site specific ESMPs
- Provide technical support to works consultants in the development of site specific ESMPs
- Coordinate with Implementing Partners and works contractors for onsite implementation of ESMPs.
- Organize and conduct the trainings on ESMF and ESMP compliances as proposed in mitigation plan.
- Prepare monthly, quarterly progress reports of Environment and Social Management Framework (ESMF) and RPF
- Coordinate and conduct Social Field Monitoring visits of Project Areas.
- Review and revision of documents and ensuring timely delivery of outputs as agreed between The World Bank and IP, PMD.
- As and when required contribute to the ongoing activities of the safeguard unit.
- To carry out the screening of the sub-projects with respect to the social aspects as defined in the ESMF;
- Monitor and check the proper implementation of all social mitigation measures as suggested in ESMF/ESMP;
- Monitoring and evaluation of social related matters of the project and maintain a social complaint register to document social issues;
- Top supervise the Contractor's activities and make sure that all the contractual obligations related to the social compliance are met;
- Review of periodic environmental and social reports being prepared by the investor/contractor
- Ensure inclusion of ESMMP guidelines in project designs.
- Screen sub-projects for Involuntary Resettlement
- Ensure Resettlement Policy Framework (RPF) is implemented and RAP is prepared if required
- Ensure Indigenous Peoples Planning Framework (IPPF is implemented and sub-project specific IP Plan is prepared if required

**Academic Qualification:**

Post Graduate degree in Social Sciences with 5-8 years of relevant work experience in dealing with Environmental management and implementation in development projects.

## Salary and Benefits:

IPs will decide as per their rules and regulations for the project

**Duration:** Till project duration

## Land Management & Resettlement Specialist

One Land Management and Resettlement Specialist will be based in IAs office for sub-project.

**Tasks:** Land Management & Resettlement Specialist will be responsible for the following duties and responsibilities relevant to project environmental safeguards compliances and mitigation measures

**Objective:**

Provide expert support to executing agencies in the office and field, provide support to implement activities related to the project components for compliance to environmental safeguards and mitigation measures.

**Main responsibilities are:**

1. Deal with Land Management and Resettlement (LM&R) aspects of the projects and provide feedback to the Project Director on implementation of LM&R action plan under the activities of the project.
2. Initiate and facilitate the VLD process.
3. Facilitate the FIPs in VLD/Land acquisition/ Land Management and other process.
4. Supervise and monitor the departmental FIP's work engaged in (LM&R).
5. Liaison and coordination with Revenue Department and other govt agencies.
6. Cause to prepare the land acquisition and resettlement plans in accordance with agreed timelines and submit the same to WB through NDRMF.
7. Submit brief report including proposed alignment of the project to the concerned district revenue departments.
8. Cause to publish the intent for land acquisition under section 4amd revenue record in case of VLD.
9. Arrange participate and document the stakeholders/ community consultations ensuring that the required information are disseminated to all the stakeholders.
10. Cause to obtain land record along with cadastral maps from the revenue department.
11. Attend the meetings of the District Price Assessment Committee, ensuring that the proposed rates are in accordance with the market prices.
12. 9) Monitoring and reporting of social issues compliance during the implementation of the project.
13. 11) Disclose the contents of the LARP to all concerned.
14. 12) Establish complaint and Grievances redress mechanism.
15. 13) Any other tasks related to land acquisition & resettlement.

**Academic Qualification:**

Post Graduate degree in Social Sciences with 5-8 years of relevant work experience in dealing with Resettlement.

**Salary and Benefits:**

IPs will decide as per their rules and regulations for the project

**Duration:** Till project duration

## Gender Mainstreaming Specialist

One Gender Mainstreaming Specialist will be based in Project Implementation Unit (PIU) Islamabad.

**Tasks:** Gender Mainstreaming Specialist will be responsible for the following duties and responsibilities relevant to project gender mainstreaming compliances and gender equity measures.

**Objective:**

Provide expert support to executing agencies in the office and field, provide support to implement activities related to the project components for compliance to gender mainstreaming and gender sensitization

**Main responsibilities are:**

- Providing strategic policy advices to government counterparts for gender mainstreaming.
- Support in creation of strategic partnerships and alliance building for the promotion of gender equality.
- Promoting gender equality in forest enterprises and institutions.
- Ensure gender equity in land tenure and rights to forest resources.
- Ensure access to education and training, and building a gender-balanced entrepreneurial capacity in the sustainable management of forest resources.
- Oversee safeguards monitoring of the ESMF and site specific ESMPs
- Providing technical support to the focal person on gender of FIPs, including the developing of Gender Action Plan (GAP).
- Collection and analyzation of gender-disaggregated data to develop gender responsive forest sector programmes and policies.
- Coordinate with works contractors for onsite implementation of GAP.
- Organize and conduct the trainings on gender mainstreaming and gender sensitization.
- Prepare monthly, quarterly progress reports of gender equity and gender mainstreaming in the project.
- Assist the Project Director in routine office matters when required.
- Work as the focal point for World Bank to provide necessary requirements of gender compliances within the project.

**Academic Qualification:**

Advanced university degree in Gender Studies, Social Science, International Development or Humanitarian Studies, with 5-8 years of relevant work experience in dealing with Gender Mainstreaming and gender equity implementation in development projects.

### Salary and Benefits:

IPs will decide as per their rules and regulations for the project

**Duration:** Till project duration

**Note:**

- For the Fund Implementation Partners (FIPs), it will first have to be seen whether a dedicated or nominated focal person on gender mainstreaming exists or not, after which relevant steps will be taken to ensure gender mainstreaming in the project.
- It will also be seen on a sub-project basis if a consultant is required, looking at the capacity of the existing gender mainstreaming team of the FIPs.

# Annexure-9: Sample Voluntary Land Donation Form

The following agreement has been made on ……..... day of ……..... between Mr./Ms. ……..…, aged ....., resident of …….. zone, district ……..…… (the Owner) and …… (the Recipient/Subproject Proponent).

1. That the land with certificate no…… is a part of ……, is surrounded from eastern side by……, western side by……., northern side by …….., and southern side by…….

2. That the Owner holds the transferable rights of land ……..... (area in square meters), with plot no…… at the above location (include a copy of the certified map, if available)

3. That the Owner testifies that the land/structure is free of squatters or encroachers and not subject to any other claims.

   3.1That the Owner hereby grants to the……..... (name of the Recipient) this asset for the construction and development of the ……..…. ……for the benefit of the community.

   3.2That the Owner will not claim any compensation against the grant of this asset nor obstruct the construction process on the land in case of which he/she would be subject to sanctions according to law and regulations.

   3.3That the …… (name of the Project Proponent) agrees to accept this grant of asset for the purposes mentioned.

**Name and Signature of the Owner**

**Signature of Subproject Proponent/Representative**

…….. ……..

**Witnesses**:

1……

2……

(Signature, name and address)

**Agreement for Communal or Tribal Land**

**ANNEX B - MEMORANDUM OF AGREEMENT**

This **Memorandum of Agreement (MOA)** entered into by and between;
The FIP/Department ----------as represented by the Office of ----------;
---AND---
The community of _____(Name of Ward), _____ (District), in the Province of _____ represented by its wards leaders, tribal head, leaders of clans and sub-clans, the names of which are enumerated at the end of this document;
---WITNESSETH---
**Whereas,** the Department/ FIP ----------is implementing the ----------(the Project) in order to support achieving the objective of (Scheme purpose) ---------- , with the financial assistance from NDRMF and other development partners;
**Whereas,** _____(the subproject site) has been selected by the Community----------which requires the use of non-state/customary land as there are no suitable state lands available in the sub Projectpilot area;
**Whereas,** the clans and communities who jointly own the land identified for the subproject intervention are fully (i) aware of the subproject benefits for their communities, mainly improved resilience to disaster management (ii) supportive of the proposed intervention; and (iii) are willing to provide voluntarily the use of identified land for subproject activities.
**NOW, THEREFORE**, for and in consideration of the foregoing premises and covenants hereinafter stipulated, FIP (Department Name) ----------and the clans and communities who jointly own the customary land that is required for the subproject intervention have entered into this agreement:

**1.0 Identification and Location of the intervention**

1.1 (FIP)----------has considered the subproject intervention _____ under the NDRMF financing. This site has an area of _____square metres.
1.2 We certify that we, as individuals and representatives of our communities and clans, are the exclusive customary owners of the subproject location. The particulars of our customary land are described below;
Location (name):_____
Ward: _____
District: _____
Province: _____

Name and Signature of the Owners _____

_____

_____

_____

_____

**Signature of Subproject Proponent/Representative**

Witness (1) ----------

---

Witness (2)
---

# Annexure-10: Stakeholder Consultation Report

## Stakeholder Consultation

Consultation meetings were conducted with relevant stakeholders including federal and provincial governments and NGOs to explain the restructuring of the project, scope of activities, institutional arrangement and environmental and social safeguard requirements to be applied for the project including ESMF. The consultation meetings were carried out for government entity and NGOs separately.
The minutes of the consultation meetings were as follows:

## 1. Consultation with government

**Date:** December 18, 2019
**Venue:** NDRMF headquarter in Islamabad

**Key findings of the consultation:**
All the participants showed appreciation on the project. Main comments raised are scope of the project, priority area, potential environmental and social issues such as soil conservation and community involvement and safeguard instruments. The summary of points discussed in these consultation meetings are given below.

| Sr.no. | Title/Organization | Comments | Response |
|---|---|---|---|
| 1 | • Saqib Mehmood – Conservator of Forest, Rawalpindi<br>• Ashfaq Bashir Bhutta – DFO, Timber Extraction Division, Rawalpindi | • Mechanization of the forestry works<br>• Soil conservation is very important component for the sub-mountainous tract in the foothills and watershed management in these areas to increase the life reservoirs.<br>• Afforestation project directly contribute towards uplifting of socioeconomic conditions of locals and job creation. | • All these concerns will be addressed by implementation of intervention no iii of sub-component 2.1.<br>• Project will have positive benefits on local community's socioeconomic conditions through forest services.<br>• Preferably afforestation will have positive impacts on conservation of land degradation and ultimately improve the lifespan of dams/reservoirs.<br>• Forest department shall identify potential sites where afforestation could have the aforementioned benefits. |
| 2 | Muhammad Ali Khan – Director EPA KPK | • Promote awareness in Ex-FATA region as the area is behind on the knowledge of climate change.<br>• Adaptation is needed on priority on the extreme south of KP in sector of agriculture, livestock and water resources.<br>• Sub-projects environmental plans shall be shared with EPA | • All such areas are included in the project plan and implementation will have awareness/training program as well.<br>• Afforestation will ultimately have positive impacts on agriculture, livestock and water resources.<br>• ESMPs will be shared with EPA and already included in the project appraisal |
| 3 | M. Tariq Masood Farooka – Director PDMA Punjab | • In south Punjab, hill torrents from sulaiman ranges produce flash floods and cause destruction in DG Khan and Rajanpur districts can flood water channels be proposed under the policy. | • NDRMF is already working on flood protection works and projects are in pipeline for hill torrents.<br>• PDMAs of respective provinces are in liaison with NDRMF and projects are |

| | | | |
|---|---|---|---|
| | | • Can stock/storage facilities along with office for district disaster management authorities be covered under the policy. | expected for such facilities in near future. |
| 4 | Amjad Ali Shah – Conservator of Forest, Sindh Forest Department | • Restoration of riverine forest ecosystem and irrigated be included in component – 2.<br>• Capacity building of forest officials be included.<br>• Mass awareness among people of forest resource be made part of project.<br>• Community forestry/forest through public private partnership be encouraged.<br>• Establishment of botanical garden, nature parks and development of tourism resort in forest areas be encouraged. | • All types of forest areas will be focused in the project.<br>• Capacity building sessions are part of ESMF and project interventions will be projected through media for mass awareness.<br>• Voluntary Land Donation mechanism is established and included in the ESMF to encourage PPP<br>• Eco-tourism is part of sub-component 2.1 |
| 5 | M. Amin Baig – Deputy Director, EPA Punjab | • Implementation of policy e-vehicle policy – beside piloting e-vehicle policy, the policy for mass transit should also be formulated and implemented.<br>• Promoting Eco-tourism – It is suggested that at eco-tourism, the concept of solar cooking and usage of biofuel should be promoted also at cafeterias. | • Piloting of E-vehicle policy will be implemented stepwise based on the government capacity<br>• A good suggestion for Eco-tourism and concept of solar stoves shall be considered in the project |
| 6 | Afsar Khan – Deputy Director, EPA Peshawar | • To prepare concept papers, priority be given to hydraulic structures investment like small pondss or construction of seasonal khwars (streams) to mitigate hazards of flood.<br>• Adaptation to climate change be focused to es-FATA where livestock agriculture and land fertility is on rapid decline due to harsh pattern of the climate.<br>• Contingency funds be allocated in relevant department other than PDMA/NDMA. | • Under the other financial window, NDRMF is already working in KP with AKF for flood protection on these seasonal streams on community driven approach.<br>• Project will entertain projects from all over Pakistan including FATA |
| 7 | Syed Munawar Hussain – AD GB-EPA | • Avoid to implement projects on mine and minerals site.<br>• Avoid to use RoW of electric transmission lines.<br>• Circulate documents to provinces for comments. | • Projects will be screened for all such interventions<br>• Project will avoid areas where chances are find to have interaction with high voltage transmission line.<br>• ESMPs will be shared with EPA and available for general public and other relevant stakeholders for review and comments<br>• Local communities will also be consultation during preparing of site specific ESMPs and or checklists. |
| 8 | Israr Ahmed – Deputy Chief P&DD-GB | • Further discussion are required for provinces to understand the project proposal more comprehensively with reference to the specific areas of | • Meetings with provincial governments will also be conducted in order to discuss project scope of work further.<br>• NDRMF has an established forum in |

| | | | |
|---|---|---|---|
| | | interventions (Need based). | the form of Provincial Disaster Risk Management Committees (PDRMCs), call for proposal submission will be circulated through this forum. |
| 9 | Aamir Shaikh – Assistant chief (EPR), Planning and development department Govt of Sindh | • Presently, NDMA provides 70% funding while province government provides 30% of funds to the project. Based on financial constraints of provincial government their sharing of funds may be reduced to 10 to 20%.<br>• In ESMF, negative social impacts should be incorporated for e-vehicle policy in terms of business shifting, analysis of obstruction/hindrances.<br>• Huge challenge of improper communication between different stakeholders/provinces/district government/federal government/community etc. no of same/similar nature of project security digitalize mapping/coordination for all type of NDMA or Climate change related project should be done at federal level after consultation of all stakeholders.<br>• Sindh is most effective province due to distant of eco-system in terms of drought, marine life, less availability of water at tribal areas.<br>• Ecosystem restoration fund should be given priority and also suggested to arrange one session at Karachi for awareness and better understanding of the funds.<br>• Agriculture waste may be generated due to this project that may impact negatively to the society waste management plan should be prepared and incorporated. | • Project cost sharing modalities are yet to be finalized but under discussion.<br>• Social impact assessment checklists are part of ESMF and project interventions will be screened for all such anticipated impacts.<br>• World Bank through NDRMF will engage all the stakeholders to avoid miscommunication gap during proposed project.<br>• Sindh province will be benefited equally in the project and PDRMC can play active role in sites identification and interventions prioritization<br>• As best practice NDRMF will conduct sessions with provincial governments for orientation and better understanding of project<br>• Solid waste will be managed through site specific ESMPs |
| 10 | M. Imran Sabir – Deputy Director, Sindh EPA | • Need to conduct specific meeting for provinces to discuss provincial level activities.<br>• Before considering the project, project EIA/IEE/EC may be conducted, which is a regulatory requirement under the environmental laws.<br>• Since, environment is a cross-cutting subject, the capacity building to EPA's needs to be enhanced.<br>• As air quality is an emerging issue specially city of Karachi, which have approximately 30 million population and seven (7) industrial zone, a pilot project required to generate air quality | • As best practice NDRMF will conduct meetings with provincial governments for orientation and better understanding of project<br>• ESMF is adherent to national environmental policies and its amendments.<br>• In case of category B projects (environment) baseline will be developed for air, water and noise during design phase. In implementation and completion phase these baseline parameters of air, water and noise will be monitored properly |

| | | | |
|---|---|---|---|
| | | data. | |
| 11 | General Comments | • No riverine forest is mentioned under ESMF<br>• What is the procedure to send PC-I and intimation to the government?<br>• What is size of fund in terms of money?<br>• Afforestation and conserving biodiversity are overlapping in component 2 thematic areas.<br>• What is mechanism to take care of forests after the project finishes?<br>• Value addition to indigenous people<br>• $ 188 million when divided into provinces will be exhausted instantly when the project starts amongst provinces.<br>• Projects on disputed lands<br>• Monitoring of project benefits would be a challenge due lack of baseline data e.g. data on carbon<br>• Estimation of project rate of return might difficult and is an integral part of proposal format<br>• Projects shall have budgetary provisions to conduct feasibility studies required | • Afforestation will include riverine forest as well<br>• NDRMF will open call for proposal and will be notified through various media sources (news, print media and website).<br>• Project will include phasing out strategy for its interventions to achieve the desired results.<br>• ESMF is equipped with indigenous people plan to avoid the adverse impacts<br>• Projects on disputed lands will screened out to avoid communal conflicts which can hinder project<br>• Government is working on it to have carbon baseline and would be available in nest few months for stakeholders.<br>• For EIRR, environmental services of afforestation could be added<br>• World Bank is working out to support technical assistance required for the project studies if required. |

**Participant List:**

**ESMF STAKEHOLDER CONSULTATION (PUBLIC SECTOR)**

| | | | |
|---|---|---|---|
| **Project:** | Pakistan Hydro-Meteorological and Ecosystem Restoration Project | **Meeting Date:** | 18-Dec-19 |
| **Facilitator:** | NDRMF | **Place/Room:** | NDRMF BOARD ROOM |

| | Name | Title | Organization | Phone | Signature |
|---|---|---|---|---|---|
| 1. | M. TARIQ MASOOD FAROOKA | Director | PDMA Punjab | 0323-4444205 | |
| 2. | M. Imran Sabir | Deputy Director | Sindh EPA | 0345-3019757 | |
| 3. | Mohd Hussain Khan | Deputy Conservator WIL | IC PK Wildlife Dept KP | 0300-5797429 | |
| 4. | Muhammad Adam Ghaus | D.G. | Sindh Coastal Development Authority | 0336-8759426 | |
| 5 | Parwaiz | DG | PDMA KP | 0333-911 8803 | |
| 6 | Amjad Ali Shah | Conservator of Forests | Sindh Forest Deptt. | 03133767679 | |
| 7 | Saqib Mehmood | CF Rwp (North) | Punjab Forest Deptt. | 0321-8500100 | |
| 8. | Ashfaq Bashir Bhutta | DFO, JED, RWP | Punjab Forest Deptt | 03315419629 | |
| 9. | S Munawar Hussain | AD GB-EPA | GB-EPA | 0312-9730340 | |
| 10. | Aamir Sheikh | AC (EPR) P&D Deptt | Planning & Development Department Govt of Sindh | 0332-3590559 | |
| 11. | Dr. Ishfaq Ahmed | Conservator of Forests | ASK Forest Deptt | 03115261461 | |
| 12. | Ali Hassan | General Manager Operation. Forest | Forest Development Corporation KP | 03015979897 | |
| 13. | Afsar Khan | Dy. Dir | EPA Peshawar | 0301-2776945 | |
| 14 | Ahsan Tehsin | DRM Specialist | World Bank | 03047740160 | |

**ESMF STAKEHOLDER CONSULTATION (PUBLIC SECTOR)**

| | | | |
|---|---|---|---|
| **Project:** | Pakistan Hydro-Meteorological and Ecosystem Restoration Project | **Meeting Date:** | 18-Dec-19 |
| **Facilitator:** | NDRMF | **Place/Room:** | NDRMF BOARD ROOM |

| | Name | Title | Organization | Phone | Signature |
|---|---|---|---|---|---|
| 15. | Muhammad Ali Khan | Director | EPA KP | 03219029857 | |
| 16 | Israr Ahmad | Dy. Chief | P&D GB | 03555558889 | |
| 17 | Abdul Salam | A. Director | EPA Punjab | 03344782062 | |
| 18 | M. Amin Baig | Dy Director | | 0322-5177346 | |
| 19 | BILAL KHALID | Analyst | WORLD BANK | | |
| 20 | M. Junaid Akhtar | Manager M&E | NDRMF | | |
| 21 | Hassan Riaz Gondal | ASSISTANT MANAGER | NDRMF | 0334-5096564 | |
| 22 | M. Areeb Zaman | MT- Environment | NDRMF | 0312-2822130 | |
| 23 | Muhammad Ali Durrani | DM-Environment | NDRMF | 0335-9333992 | |
| 24 | Shaharyar Ahmed | MT- Research | NDRMF | 0333-5273246 | |
| 25 | M. Farwad Hayat | DEM | NDRMF | 0345-8946449 | |
| 26 | Ana Fatima Pasha | MT | NDRMF | 0332-5533451 | |
| 27 | | | | | |
| 28 | | | | | |

## Pictures




## 2. Consultation with NGOs

**Date:** December 19, 2019
**Venue:** NDRMF headquarter in Islamabad
**Key findings of the consultation:**

| S. No | Respondent Details | Comments/Feedback | Response |
|---|---|---|---|
| **1** | **Name:** Safyaan Kakakhel.<br>**Organization:** CSCCC.<br>**Title:** Research Manager. | • Factor in any co-benefits to organization associated with PMD (e.g. GCISC) etc.<br>• Elaborate the detailed M&E framework within the ESMF to instantly identify problems and initiate measures to solve them in order to avoid wastage of resources<br>• Conduct periodic assessment and review sessions at all levels of govt./civil society to keep track of progress and learn from previous work i.e. lessons learnt | • A detailed Environmental and Social Management Plan has been prepared which will be complied with to ensure compliance at the early stages of the project.<br>• Consultation process will be iterative and will be conducted throughout the life of the project to incorporate best practices and lessons leant |
| **2** | **Name:** Dr. Athar Hussain<br>**Organization:** CCRD, COMSATS university Islamabad.<br>**Title:** Prof, Head of Department of meteorology | • At least two aspects need to be incorporated into the ESMF under suitable component/new component.<br>• Engagement of academia that interact with youth of country regularly to make the goals of ESMF sustainable.<br>• Research element needs to integrated, relevant to climate resilience and climate smart technologies.<br>• Academia. | • Stakeholder sessions will be conducted with academia as well and research groups will be involved. |
| **3** | **Name:** Engr. Shah Faisal<br>**Organization:** Islamic Relief<br>**Title:** Water and Infrastructure Specialist | • The eco-restoration project is a great initiative and its implementation requires a well thought out plan for the selected partner on the model of public-private partnership.<br>• Universal best practices like source to sea concept for better water resource management should be applied which can cover the multiple objectives of the project.<br>• ESMF should be further integrated with the logic model of each subproject and there should be verifiable indicators for the partners to comply with<br>• A separate workshop can be arranged for the detailed feedback on ESMF guidelines. | • Universal best practices will be applied.<br>• Indicators will be defined and monitoring will be ensured based on those indicators. |
| **4** | **Name:** Dr. Asad<br>**Organization:** PPAF<br>**Title:** Project Director | • In construction phase, restriction to access was mentioned in presentation but an important aspect is damage done by dumpers/trucks to existing roads and their quality owing to the extraordinary movement of vehicle. Please add damage to existing roads as an impact | • Impacts on access routes will be detailed in the sub-project specific ESMPs. |
| **5** | **Name:** Moiz Rafi<br>**Organization:** Snow Leopard Foundation | • Prioritize the focus areas in terms of most urgent/important interventions.<br>• Stakeholders with experience in focus area can | • Activities will be prioritized in consultation with stakeholders and the |

| | | | |
|---|---|---|---|
| | (SLF)<br>**Title:** Assistant Director Communications | be asked to share inputs and deliberations. | consultation process will be iterative to incorporate most effective solutions. |
| **6** | **Name:** Saeed Abbas<br>**Organization:** IUCN<br>**Title:** Project Manager | • Under ESMF waste management policy is missing – specially the solid waste management policy as one of the areas for projects is regarding promoting eco-tourism, which generates a lot of solid waste examples of Murree and Kaghan, Naran and now Gilgit-Baltistan are there!<br>• There should also be a policy, which covers the traditional resource use under customary laws and bridging any gap if prevails, conflicting with the statuary laws. | • Such matters will be detailed in the subproject ESMPs which will be prepared after submission of each proposal. |
| **7** | **Name:** Dr. Taqi Mehran<br>**Organization:** NUST<br>**Title:** Assistant Professor | • Subcomponent 2.3 requires development of local solutions for local problems and academia should be a part of this framework. The research on finding actual solutions and real-conditions investigation needs to be done.<br>• Participation of researchers from university such as NUST, COMSATS must be part of framework.<br>• More priority should be given to research for finding solutions.<br>• Innovative solutions through research and development should be prioritized. | • Stakeholder sessions will be conducted with academia as well and research groups will be involved to find most effective solutions. |
| **8** | **Name:** Neshmiya Adnan Khan<br>**Organization:** WWF Pakistan<br>**Title:** Coordinator Policy & Safeguards | • Have the communities where the project area proposed to be implemented consulted? Have participatory sessions been done?<br>• What will you do if the communities do not want a project?<br>• If livelihoods are impacted, what alternative livelihoods will be provided?<br>• Will protected zones/forests prevent communities from accessing natural resources they were reliant on?<br>• Please conduct participatory mapping to determine overlapping over land, property and natural resources to avoid future disputes. | • The exact scope and location of interventions is not finalized at this stage of the project; hence, a framework approach has been utilized.<br>• Communities will be consulted and made part of the whole process once activities have been clearly defined.<br>• Access route framework will be developed to avoid impacts related to access restriction. |
| **9** | **Name:** Sheraz Baig<br>**Organization:** Hashoo Foundation<br>**Title:** Head of Program | • Projects discourage use of plastic<br>• Include activities to review policies and laws governing natural resource management, water, etc.<br>• Priority be given to support indigenous communities like kalash, GB, Chitral, Bamburet | • The use of plastic will be minimized.<br>• Relevant policies and laws will be reviewed and activities will be prioritized accordingly.<br>• The project envisages to conduct ecosystem restoration throughout Pakistan including indigenous community of Kailash. |
| **10** | **Name:** Shazia | • Mapping exercise of those NGOs/INGO's who | • A screening criterion will be |

| | | | |
|---|---|---|---|
| | Shaheen<br>**Organization:** Strengthening Participatory Organization (SPO)<br>**Title:** Head of Programme | are already doing the same work.<br>• Mapping exercise should anchor the strengthening of those initiative which are contributing sharply in SDGs/or international/national/local indicators. Rather than exclusion, restraining the PHCSP from those particular initiative. | developed for all the submitted proposals which will align the activities with the key priority areas.<br>• Duplication will be avoided by conducting thorough research by NDRMF and FIPs simultaneously. |

## Participant List

**ESMF STAKEHOLDER CONSULTATION (NON - PUBLIC SECTOR)**

| | | | |
|---|---|---|---|
| Project: | Pakistan Hydro-Meteorological and Ecosystem Restoration Project | Meeting Date: | 19-Dec-19 |
| Facilitator: | NDRMF | Place/Room: | NDRMF BOARD ROOM |

| Sr.no. | Name | Title | Organization | Phone | e-mail | Signature |
|---|---|---|---|---|---|---|
| 1 | AAMIR KALEEM | Prog Manager | OXFAM | 0301-8217574 | AKaleem@oxfam.org.uk | |
| 2 | Moiz Rafi | Asst. Director | Snow Leopard Foundation | 0314 5501560 | moiz.rafi@slf.org.pk | |
| 3 | Rizwan Mehboob | Volunteer | | 0300 5182273 | syedrizwanmehboob@gmail.com | |
| 4 | Saeed Abbas | P. Manager | IUCN | 03112241103 | saeed.abbas@iucn.org | |
| 5 | Neshmiya Chr. | Coordinator | WWF | 03068175848 | nathan@wwf.org.pk | |
| 6 | Dr. Tagi Mehran | Asst. Professor | NUST | 0333-9910298 | tagimehran@sceme.nust.edu.pk | |
| 7 | Kanwal waqar | R&G officer | ICIMOD | 03241-8551521 | kanwal.water@icimod.org | Kanwal |
| 8 | Syed Arif | Member | PMIC | 0233 7222543 | saaarif@gmail.com | |
| 9 | Takeaki Sato | Sr. Env Specialist | WB | 2026985837 | tsato@worldbank.org | |
| 10 | Engr Shah Faisal | Water Resource Specialist | Islamic Relief | 0300-0541145 | Shah.faisal@IRP.org.pk | |
| 11 | Rabia Sabri | Program coordinator | CWSM | 03068068433 | rabia.sabri@communityworldservice.asia | |
| 12 | Dr. Athar Hussain | Prof. & Head CCRD | COMSATS UNI. | 0331-5033376 | athar.hussain@comsats.edu.pk | Athar Hussain |
| 13 | Safyan Khattak | Research Manager | CSCCC | 0310 9367557 | safyank@hotmail.com | |
| 14 | Dr. Asad | Sr. Manager | PPAF | 03004672457 | asadullah@ppaf.org.pk | |

**ESMF STAKEHOLDER CONSULTATION (NON - PUBLIC SECTOR)**

| | | | |
|---|---|---|---|
| Project: | Pakistan Hydro-Meteorological and Ecosystem Restoration Project | Meeting Date: | 19-Dec-19 |
| Facilitator: | NDRMF | Place/Room: | NDRMF BOARD ROOM |

| Sr.no. | Name | Title | Organization | Phone | e-mail | Signature |
|---|---|---|---|---|---|---|
| 15 | Aisha Khan | CE | CSCCC | 0345-8588900 | aisha@csccc.org.pk | |
| 16 | Shehraz Baig | Head of Programs | Hashoo Found. | 03335085478 | shehrazullah.baig@hashoofoundation.org | |
| 17 | Shazia Shaheen | Head of Program | SPO | 0334-4224259 | shazia@spopic.org | |
| 18 | Zeeshan Virk | Focal Person-Projects | LEAD PAKISTAN | 0334-5943838 | zvirk@lead.org.pk | |
| 19 | Ahsan Tehsin | DRM Specialist | World Bank | 03077770166 | atehsin@worldbank.org | |
| 20 | Ishfaq Khalid | PPM Analyst | World Bank | 9090226 | ikhalid@worldbank.org | |
| 21 | Dr. Imran Khalid | Head Env. & CC | SDPI | 0331-3589700 | iskhalid@sdpi.org | |
| 22 | Irshad Abbasi | Director | Aga Khan Foundation (AKF) | 03008580781 | irshad.abbasi@akdn.org | |
| 23 | Dr. Athar Hussain | Head of CCRD | COMSATS UNI | 0331-5033376 | athar.hussain@comsats.edu.pk | Athar Hussain |
| 24 | Hassan Riaz | AM | NDRMF | 0324-5096564 | | |
| 25 | M. Areeb Zaman | MT - Env. | NDRMF | 0312-2582136 | areeb.zaman@ndrmf.pk | |
| 26 | Shahanyar Ahmed | MT- Research | NDRMF | 0333-5293246 | shahanyar.ahmed@ndrmf.pk | |

## Pictures