E4827

Pakistan

DISASTER AND CLIMATE RESILIENCE IMPROVEMENT PROJECT

Environmental and Social Management Framework (ESMF)

Government of Punjab

and

Azad Government of the State of Jammu and Kashmir

April 2015

ABBREVIATIONS

ADP	Annual Development Program
AJK	Azad Jammu and Kashmir
BP	Bank Policy
DCRIP	Disaster and Climate Resilience Improvement Project
DRM	Disaster Risk Management
EIA	Environmental Impact Assessment
EMA	External Monitoring Agency
ESMF	Environmental and Social Management Framework
ESMP	Environment and Social Management Plan
GoAJK	Government of Azad and Jammu Kashmir
GoPb	Government of Punjab
GRC	Grievance Redressal Committee
GRM	Grievance Redressal Mechanism
IA	Implementing Agency
IR	Involuntary Resettlement
M&E	Monitoring & Evaluation
NGOs	Non-Governmental Organizations
OM	Operations Manual
OP	Operational Procedure of the World Bank
PAPs	Project Affected Persons
PDMA	Provincial Disaster Management Authority
PID	Provincial Irrigation Department
PIU	Project Implementation Unit
PSDP	Public Sector Development Program
P&D	Planning and Development Department
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SDMA	State Disaster Management Authority
SEMU	Social and Environmental Management Unit
SIA	Social Impact Assessment
SMP	Social Management Plan

DEFINITION OF TERMS

Involuntary Resettlement: Economic or physical dislocation resulting from a development project

Compensation: Payment in cash or in kind of the replacement cost of the acquired assets.

Land Acquisition: The process whereby a person is compelled by a government agency to alienate all or part of the land a person owns or possesses to the ownership and possession of the government agency for public purpose in return for a consideration.

Improvements: Structures constructed (dwelling unit, fence, waiting sheds, animal pens, utilities, community facilities, stores, warehouses, etc.) and crops/plants planted by the person, household, institution or organization.

Entitlement: Range of measures comprising compensation, income restoration, transfer assistance, income substitution, and relocation which are due to affected people, depending on the nature of their losses, to restore their economic and social base.

Host population: Community residing near the area where the Project beneficiaries are resettled as part of the Project.

Affected Person/People: Any person affected by Project-related changes in use of land, water, natural resources, or income losses.

Affected Family: All members of a household residing under one roof and operating as a single economic unit, who are adversely affected by the Project, or any of its components. It may consist of a single nuclear family or an extended family group.

Detailed Measurement Survey: means the detailed inventory of losses that is completed after detailed design and marking of project boundaries on the ground.

Encroachers: mean those who own property and extend it into adjacent areas that are not owned by them.

Squatter: means those occupying public lands without legal arrangements with the Government or any of its concerned agencies.

Vulnerable Persons: Distinct persons who might suffer disproportionately from resettlement effects, such as the very old, the physically or mentally handicapped, the poor below the poverty line, widows, women-headed house hold and socially isolated.

Cut-off date: means the date after which people will not be considered eligible for compensation. In case of land acquisition, the cut-off date for the titleholders is the Section 4 of Land Acquisition Act 1984. But in case of where people lack title, it is the beginning date of the census survey to be under taken by the Implementing Agency for the impact assessment, in order to avoid an influx of outsiders.

Rehabilitation: Re-establishing incomes, livelihoods, living, and social systems.

Relocation / Rebuilding: Housing, assets, including productive land, and public infrastructure in another location.

Non-titled: means those who have no recognizable rights or claims to the land that they are occupying and includes people using private or state land without permission, permit or grant.

Rural area: As per the definition in the Local Government Ordinance, any area other than an urban area.

Executive Summary

Background

1. Governments of Punjab and Azad Jammu and Kashmir (AJK) intend to execute the Disaster and Climate Resilience Improvement Project (DCRIP) in their respective province/territory. The proposed activities in the project include restoration of flood protection infrastructure and improvement of disaster risk management systems. The project includes civil works but no new construction activity; hence it has been categorized as Environment Category B according to World Bank classifications.

2. As the list of project activities and locations is not finalized, a framework approach has been adopted. Under this approach, the present Environmental and Social Management Framework (ESMF) along with a Resettlement Policy Framework has been prepared by the Governments of Punjab and AJK to identify all the potential but generic negative environmental and social impacts, propose mitigation measures, provide basic screening criteria for selecting subprojects, list the type of instruments to be developed for individual subprojects during DCRIP implementation and provide institutional arrangements, grievance redressal mechanisms and monitoring, reporting and documentation measures for environmental and social safeguards compliance. The ESMF covers all physical works activities as well as feasibility and other studies to be carried out under the project.

Project Description

Component 1: Restoring flood protection infrastructure and upgrading flood management systems– USD 100 million

3. Component 1 aims to enhance physical resilience through the restoration, rehabilitation and improvement of critical flood protection infrastructure.

4. *Subcomponent 1.1. Flood Protection Works (USD 80 million):* This subcomponent will finance the restoration of flood protection infrastructure damaged during 2014 flood in Punjab and AJK. These investments will include:

   a) Restoration of flood embankments to resilient standards
   b) Rehabilitation of other infrastructure such as spurs and river channelization works

5. Potential flood mitigation investments in Punjab and AJK include some works that are at an advanced stage of readiness and could be taken up under this subcomponent in the short term. The Government has shared a prospective list of ready investments with the Bank in this regard. The financing requirements for these immediate works are USD 65 million in Punjab and USD 15 million for AJK,

6. A framework approach will be used to finalize sub-projects under this component based on selection criteria[1]. This approach is being taken due to the emergency nature

[1]These criteria will inter alia include: (i) economic impact; (ii) technical readiness and feasibility criteria; (iii) demand by local communities; (iv) implementation duration; and, (v) scale of safeguards issues and mitigation costs. As and when the selection criteria are met, subprojects would be financed.

of the project. In addition, the component will finance preparatory work for those additional investments requiring longer preparation times. It will also support the agency implementing the infrastructure work in Punjab to further enhance their flood management systems.

7. *Sub Component 1.2. Feasibility Studies and Diagnostics for Medium-Long Term Works (USD 15 million):* This subcomponent will finance preparatory activities (feasibility studies, consulting services for surveys, designs, environmental and social impact assessments, etc.) for proposed medium-long term investments that may bring about significant improvements to flood protection and have high economic benefits. Once preparatory activities are completed, these works may also be considered for support through the framework approach.

8. *Sub Component 1.3. Upgrading Flood Management Systems (USD 5 million):* The sub-component will support the Punjab Irrigation Department for implementation of non-structural measures to enhance flood management and its related equipment upgrades and studies. Specifically, (i) *Establishment of a Decision Support System* with its required telemetry system to facilitate evidence based decision making related to selecting optimal breaching sites, managing flood peaks, and irrigation infrastructure management during flood events; (ii) *Safety evaluation of flood protection structures*, which will involve building in-house capacity at PID and providing the required equipment for structural safety assessments; (iii) *Supporting the Irrigation Research Institute* to undertake studies/ trainings on improving design, operations, and maintenance of flood protection infrastructure, and; (iv) *River morphology studies and floodplain mapping* of selected eastern rivers impacted by the 2014 floods (i.e. Jhelum and Chenab Rivers) as well as floodplain mapping for these rivers, to identify risks and possible mitigation measures.

Component 2: Upgrading Climate Infrastructure –USD 23 million

9. Component 2 aims to enhance climate resilience by upgrading the national hydro-meteorological observation network and associated flood early warning systems (FEWS). The project will support improvement of hydro-meteorological information services through upgrading radar equipment, strengthening flood forecasting capability and early warning systems, and improving dissemination of hydro-meteorological information. Further, the weather forecasting system will be upgraded beyond current capabilities, to support 24 hours-per-day, 365-days-per-year operations, with forecast lead-times of 7-days, including forecast verification to assess forecast reliability. The aging radars will be replaced and upgraded while gaps in radar coverage will also be addressed through the project.

Component 3: Managing Disasters –USD 18 million

10. Component 3 aims to strengthen the government's capacity to better manage disasters. This component would finance risk identification, institutional strengthening for improved management of disasters and enhancing fiscal resilience.

11. *Subcomponent 3.1. Risk Identification (USD 2 million):* This subcomponent will focus on identifying the risk environment for informed planning and decision-making, development of framework to undertake the assessments, as well as tools to

allow the optimal utilization of risk information. Specifically a) Studies on urban and flash flooding in Punjab and; b) Slope stabilization studies in AJK

12. *Subcomponent 3.2. Institutional Strengthening for DRM (USD 12 million): This* subcomponent will provide support towards strengthening the DRM institutional structure as well as building capacity and equipping the Disaster Management Authorities in Punjab in AJK will include: a) Institutional and policy review; b) Strengthening of DMAs down to district level; and c) Mainstreaming DRM in the planning process in collaboration with Planning and Development (P&D) Department, Punjab.

13. *Subcomponent 3.3. Fiscal Resilience (USD 4 million):* The subcomponent will support the Federal and Punjab governments to develop a National Disaster Risk Finance Strategy. The strategy will formalize objectives and scope, evaluate various financial instruments to finance contingent liability to natural disasters, and recommend implementation of selected instruments.

14. The project will also provide advisory services to Punjab Provincial Disaster Management Fund (PDMF). The project would support the development of an appropriate governance structure, SOPs, fiduciary safeguards and controls, and transparent allocation criteria, drawing on international good practices.

15. The Government of Punjab used early recovery cash transfers for the floods in 2010, 2011, and 2014. The sub-component will support the development of a standard emergency cash transfer system in collaboration with the PDMA and Punjab Social Protection Authority (PSPA).

Component 4: Project Management – USD 9 million

16. The project will be implemented through mandated government departments including Pakistan Meteorological Department, Punjab Irrigation Department, Punjab Disaster Management Authority, and Planning and Development Department, AJK. This component will support engagement of additional resources at Project Implementation Units within these departments.

Component 5: Contingent Emergency Response– USD 0 million

17. Following an adverse natural event that causes a major natural disaster, the government may request the Bank to re-allocate project funds to support response and reconstruction. This component would draw resources from the unallocated expenditure category and allow the government to request the Bank to reallocate financing from other project components to partially cover emergency response and recovery costs. This component could also be used to channel additional funds should they become available as a result of the emergency.

Summary of Works

18. The components of the project that may potentially cause environmental and social impacts and therefore relevant for the present analysis are the physical works. The summary list of potential physical activities is provided below:

- Restoration of flood embankments to resilient standards
- Rehabilitation of other infrastructure such as spurs and river channelization works
- Installation of meteorological instruments

19. In addition, the present ESMF covers the feasibility and other studies to be carried out under the project.

20. Most of the proposed activities comprise rehabilitation, maintenance or repair works and are not required acquisition of private lands. The works on flood protection structures would not involve any structure large enough to trigger the dam safety policy. The activities will be screened to ensure none of the activities result in any irreversible or significant environmental or social, negative impact. Hence all the activities carried out under the project will fall under WB Environment Category B.

Safeguards Policies Triggered

21. Based on an assessment of the civil works involved the following safeguards policies are relevant for the project:

Safeguard Policies Triggered	**Yes**	**No**
Environmental Assessment (OP/BP 4.01)	X	
Natural Habitats (OP/BP 4.04)		X
Forests (OP/BP 4.36)		X
Pest Management (OP 4.09)		X
Physical Cultural Resources (OP/BP 4.11)		X
Indigenous Peoples (OP/BP 4.10)		X
Involuntary Resettlement (OP/BP 4.12)	X	
Safety of Dams (OP/BP 4.37)		X
Projects on International Waterways (OP/BP 7.50)	X	

22. For Dam Safety policies, the ESMF identifies the scale and nature of activities that would not be conducted to ensure that this policy is not triggered. In general the screening criteria for selection of activities identifies that no activities with any significant or irreversible environmental impact shall be conducted. As stated above, the project will not cover any subprojects that fall under WB Environment Category A.

Environmental and Social Safeguards Screening

23. As part of environmental and social assessment process, environmental and social safeguards rapid screening exercises have been conducted by the Governments of Punjab and AJK and draft screening report for potential list of activities has been submitted. The rapid screening exercise has identified the following potential impacts from the project activities:

24. Positive Impacts:

- Protection of human lives
- Poverty reduction through protection of livelihood and productive assets
- Protection of vulnerable population from extreme poverty, deprivation, social and economic inequalities that would impact positively on economic growth and human development index.

- Well-being of children Improvement in farmer's income and living standards.
- Protection of vulnerable groups from disasters
- Protection of villages and settlement from damages to housing and other physical assets.
- Reduction in temporary displacement.
- Protection of grazing areas for livestock.
- Decrease in area of land lost due to erosion.
- Improvement in local environmental and social conditions.
- Decrease in public health risk by reducing incidence of water borne and other disaster related diseases, and mental fears
- Protection against damages to crop and livestock.
- Increase in agricultural production and economic gain.
- Provision of better conditions for intensive agriculture.
- Reduction in poverty through generation of employment opportunities for the locals.
- Protection of wildlife and Development of new habitats.

25. Potential Negative Impacts:

- Water pollution
- Diversion of water for construction
- Elimination of washing areas/sites
- Leakages of chemicals etc.
- Runoff from roads
- Change in natural flow of river.
- Land pollution may happen when solid waste material, camp site area, stone stacking area, stock yard area and removed vegetative cover is left unattended
- Noise and vibration due to movement of machinery
- Air pollution due to smoke and dust
- Traffic and public nuisance
- Removal of trees, vegetation cover during site clearance
- Loss of partial agriculture lands due to loss of encroached public lands.
- Damages to *kacha* rooms used for storage of agriculture inputs, and grains and animal sheds
- Loss of partial grazing lands
- Health and safety issues of subprojects professional staff/labor and communities residing near subproject areas
- Access issues for communities residing near subprojects areas
- Threat to cultural environment due to influx of work force, may have impact on gender

26. The ESMF and RPF assess all of these potential negative environmental and social impacts and provide mitigation measures to address these impacts as well as lists down institutional arrangements to ensure that the mitigation measures are implemented.

27. A Social Management Plan (SMP) as a part of sub-project specific ESMP will be prepared to address construction related social impacts of the sub-projects. A Resettlement Policy Framework (RPF) has been developed as a part of ESMF to allow application of OP 4.12 requirements. RPF defines objectives and principles of resettlement, including a screening mechanism for sub-projects to ensure that no such

sub-projects would be selected, which involve acquisition of private land and significant resettlement impacts. In case the land is required from government departments, common community land and private titleholders, it will be acquired as voluntary donation. In addition to this, RPF includes mechanism for preparation of Resettlement Action Plans (RAPs) to efficiently mitigate and compensate low to moderate level social impacts, institutional arrangements to implement RAPs, monitoring and reporting of RAPs' implementation and funding mechanism for them. During preparation of RAPs and ESMPs consultations will be conducted with potentially affected persons and other stakeholders, to ensure support of potentially affected and beneficiary communities, and other stakeholders. These stakeholders will be engaged during implementation of RAPs and ESMPs and monitoring of subproject results will be done via development of a citizen's engagement mechanism such as access to information, education and communication, feedback and grievance redressal mechanisms. These mechanisms will ensure transparency and accountability of project implementers and enhance positive impacts of the project.

28. The ESMF identifies and categorizes all potential activities (subprojects) that may require physical works, identifies the instrument type that will be used to screen, assess, and mitigate the negative environmental impacts, details and extent of the stakeholder consultation that shall be needed for each assessment type, the disclosure requirements and the institutional, reporting and monitoring measures that shall be needed to ensure implementation of mitigation measures.

29. The ESMF includes identification of all possible project-environment interactions, categorization of environmental impacts, identification of mitigation measures, a comprehensive environmental and social baseline, identification of stakeholders and details and results of a comprehensive stakeholder consultation exercise, institutional arrangements needed to ensure implementation of mitigation measures, monitoring, reporting and documentation regimes and table of costs associated with implementation of the ESMF.

Safeguards Screening

30. The ESMF categorizes subprojects on the basis of nature of activities, potential impacts on environment and or people and their costs,. The ESMF specifies types and extent of environmental and social assessments that will need to be carried out before initiating each subproject. The ESMF includes social and environmental checklists that will be used to assess the potential impacts of each subproject on the basis of its scale/size, nature and potential negative impacts. These checklists prescribe further screening and environmental and social management instruments to be prepared for subprojects which might have more expansive impacts.

Monitoring and Reporting

31. The project will employ a three tiered monitoring structure with focal persons nominated from the construction staff to monitor impacts during works phase. The environmental and social safeguards specialist will compile the monitoring checklists to prepare and collate regular environmental progress reports. In addition to this, annual third party validation will also be conducted to validate compliance with the ESMF and RPF, and implementation of safeguard instruments such as RAPs, ESMP.

ESMF Disclosure

32. The ESMF shall be released on the IAs and project website, hard copies shall be sent to all institutional stakeholders and all their regional offices. The ESMF shall be disclosed internally within the Bank and shall be released on InfoShop. The ESMF and RPF will be translated into local language and disclosed on the websites of IAs and the projects, and distributed among institutional stakeholders and affected and beneficiary communities at the early stage of sub-projects.

Stakeholder Consultations

33. Stakeholder consultations have been carried out while finalizing the project details and during the preparation of ESMF and RPF. These consultations have been carried out with institutional as well as grass-root stakeholders. The consultations have revealed that the project is considered to have a number of positive social and environmental impacts. However, in particular, the stakeholders suggested that mechanisms in ESMF should ensure selection of sub-projects on the basis of community needs, regular consultations, participation, communication, access to information, grievance redressal of project affected and beneficiary communities and other stakeholders; and mitigation of environment and social/resettlement impacts in an effective manner.

Institutional Arrangements

34. The PIUs to be established in (i) Provincial Irrigation Department of Punjab (ii) Planning and Development Department of AJK, would be responsible for compliance with ESMF and RPF. More specifically, the Project Director of PIU Punjab and Project Coordinator/Director of PIU-AJK will be overall responsible for the environment and social performance of their respective project components. They will also ensure effective ESMF and RPF compliance throughout the project period. In Punjab the Social and Environment Management Unit (SEMU) of PID will be directly responsible for compliance with ESMF and RPF, and sub-project screening, development of sub-project specific ESMPs and RAPs; and their effective implementation, internal monitoring and progress reporting. SEMU will be supported by an additional Environment Specialist and a Social Specialist. Additionally, the PIU would also support community participation, consultations and other social activities from the sub-project identification to completion stage.

35. In AJK, the Project Coordinator/Director will be responsible for the environment and social performance of the project. A Social and Environment Unit (SEMU) will be established at Planning and Development (P&D) Department level that will be directly responsible for the compliance of ESMF and RPF, and for the sub-project screening, development sub-project specific ESMPs and RAPs; and their effective implementation, internal monitoring and progress reporting. SEMU will be supported by an additional Environment Specialist and a Social Specialist. Additionally, the PIU would also support community participation, consultations and other social activities from the sub-project identification to completion stage. Additionally, the P&D has designated an environment and social focal point (ESFP) in each line department for the preparation and implementation of sub-project specific ESMPs and RAPs, carry out E&S monitoring, and prepare monthly progress reports under his/her respective department. The project will also engage an Environment Specialist and a Social Specialist (consultants) on an

intermittent basis to assist SEMU of Punjab and AJK in overall ESMF and RPF compliance, preparation and ESMPs and RAPs, conducting trainings and providing technical assistance.

PIU Level Grievance Redressal Mechanism

36. The PID-Punjab and P&D-AJK developed an appropriate and context specific framework for Grievance Redressal Mechanism for the project in their respective PIUs. Each PIU will establish a Grievance Redressal Committee (GRC) headed by the Project Director of each IA to implement project level GRM. The GRC will be responsible for the resolution of complaints including complaints related to environment and social performance of the project. Field level GRCs will be developed in each of the field offices responsible for the designing and implementation of sub-projects, to be headed by XEN of the field office. Field level GRC will be first level for registering and resolving complaints. The detailed GRM will be developed and included in the project Operations Manual.

37. The communities and individuals who believe that they are adversely affected by the World Bank (WB) financed project may submit complaints under established project-level grievance redress mechanism or the World Bank's Grievance Redress Service (GRS). The project level GRM and the World Bank GRS ensure that complaints received are promptly reviewed in order to address them. If complaints are not resolved by the project level mechanism or GRS, the complainants may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org. In addition to this, the complainants have a right to file their complaints in the court of law.

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1. Introduction

Floods hit parts of Pakistan in early September 2014, including Punjab and Azad Jammu and Kashmir (AJK). The disaster caused 367 deaths, mostly in Punjab province, in addition to damages to houses, agriculture, transport, irrigation and communications infrastructure. It is estimated by the National Disaster Management Authority (NDMA) that the floods affected over 2.5 million people in both rural and urban areas. The Federal and Provincial Governments were proactive in relief operations in the immediate aftermath of the floods. The relief phase has concluded and the response is now gradually moving from early recovery to medium and longer-term planning for recovery, reconstruction and increasing resilience. The governments of Punjab and Azad Jammu and Kashmir have proposed to the Bank, a project to enhance disaster and climate resilience; increase the technical capacity of Government entities to manage natural disasters and climate variability; and support restoration of flood protection infrastructure.

1.1 Background[2]

Pakistan is vulnerable to a number of adverse natural events and has experienced a wide range of disasters over the past 40 years, including floods, earthquakes, droughts, cyclones and tsunamis. These hazards are due to an active floodplain fed by snow and glacial melt from three mountain ranges – Himalayas, Karakoram and Hindu Kush, its location on a seismically active geological plate, a predominantly semi-arid landmass and a coastline frequented by cyclonic events. Exposure and vulnerability to hazards is further exacerbated by a rapid population growth, growing urbanization, environmental degradation and shifting climatic patterns that can result in the occurrence of increasingly severe natural disasters. Over the past decade, damages and losses resulting from natural disasters in Pakistan have exceeded US$ 18 billion; as the population and asset base of Pakistan increases, so does its economic exposure to natural disasters.

Pakistan faces a major financing challenge arising from natural catastrophes, with flooding causing an estimated annual economic impact of between 3 and 4 percent of the Federal Budget[3]. On average, approximately 3 million people are affected by natural catastrophes each year in Pakistan, which equates to approximately 1.6 percent of the total population. *According* to an analysis of historical natural disaster data, since 1973 approximately 77 percent of all the people affected by natural disasters were impacted by flooding events. The annual economic impact of flooding is estimated between USD 1.2 billion and USD 1.8 billion, equivalent to between 0.5 percent and 0.8 percent of national GDP; however simulations show that a major flood event (occurring, on average, once every 100 years) could cause losses in excess of US$ 15.5 billion, which equates to around **7**percent of national GDP**,** equivalent to almost 40 percent of the Federal Budget[4].

Punjab's population, geographic location and climatic conditions make it the Province most exposed to natural disasters. Over the past 30 years, 66.6% of all people affected by natural disasters in Pakistan were resident in Punjab[5]. Floods remain the dominant hazard

[2] Adopted from the WB Project Appraisal Document.
[3] Budget estimate taken from 2014-2015 Budget in Brief (http://finance.gov.pk/) exchange rated fixed at 102
[4] World Bank. 2015. *Fiscal Disaster Risk Assessment: Options for Consideration*, Pakistan
[5] World Bank. 2015. *Fiscal Disaster Risk Assessment: Options for Consideration*, Pakistan

in Punjab, despite a history of other disasters such as earthquakes, tornadoes, and droughts in the province. Floods in 1992, 1994, 1997, 2010, 2012, 2013 and 2014 have led to the loss of precious human lives and caused significant damages to public and private property. Floods in 2014 resulted in 286 deaths, with approximately 100,000 houses damaged and 2.47 million people directly affected due to inundation and / or displacement. Similarly, floods in 2013 affected almost 800,000 people, while approximately 900,000 people were affected in 2012 floods. These disaster events have continuously led to the disruption of economic activity and service delivery, in addition to burdening the public exchequer to provide for relief, recovery and rehabilitation.

The low-lying areas close to the banks of the Indus River and its tributaries experience regular flooding on an almost yearly basis during annual monsoon season which takes place from July to September. Snowmelt from the Karakoram, Hindu Kush and Himalayan mountains further feeds the flood-plains during this period, especially the catchment areas of Indus River. Increased and concentrated precipitation has been experienced over the catchment areas of rivers Chenab and Jhelum, both of which flow through northern and central Punjab, before merging with the Indus in Southern Punjab. As a result, several districts in the north and center of the province have become prone to floods. Further, flash floods and hill torrents are also a regular feature in southern Punjab as has the risk of urban flooding in major cities due to various human factors such as rapid urbanization, unplanned development and settlements, encroachments on waterways and solid waste dumping.

Azad Jammu and Kashmir (AJK) is at risk from flooding, landslides, earthquakes and avalanches because of its mountainous terrain, geographic location and climatic conditions. Floods in 2014 resulted in 56 deaths, with approximately 30,000 houses damaged and 60,000 people affected. Extreme weather events have had an adverse impact on agriculture productivity and the average per capita income of the rural household. Landslides, mudslides, and rockslides throughout AJK cause frequent injuries, deaths, road closures, and can disrupt economic activities for months. Landslides have been on the increase in recent years with the impact of deforestation and flooding and are particularly common in the most mountainous districts. Avalanches are more frequent in district Neelum due to the movement of glaciers.

The state is AJK lies over an active seismic zone with the northern areas at high risk. The state is still also recovering from extensive infrastructural damage incurred during the 2005 earthquake in which 73,338 people died, 128,304 people were injured, 600,000 houses were destroyed, and 3.5 million people displaced. The earthquake caused extensive damage to roads, water and sanitation facilities, power, and telecommunication infrastructure and other services while civil administration in affected areas became largely dysfunctional with the destruction of almost all government buildings. 6,298 educational institutions and 796 health facilities were destroyed or damaged. (ERRA Annual Review 2009-2010).

1.2 Project Overview

The Project has five components:

Component 1: Restoring flood protection infrastructure and upgrading flood management systems– USD 100 million

Component 1 aims to enhance physical resilience through the restoration, rehabilitation and improvement of critical flood protection infrastructure.

Subcomponent 1.1. Flood Protection Works (USD 80 million): This subcomponent will finance the restoration of flood protection infrastructure damaged during 2014 flood in Punjab and AJK. These investments will include:

a) Restoration of flood embankments to resilient standards
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Potential flood mitigation investments in Punjab and AJK include some works that are at an advanced stage of readiness and could be taken up under this subcomponent in the short term. The Government has shared a prospective list of ready investments with the Bank in this regard. The financing requirements for these immediate works are USD 65 million in Punjab and USD 15 million for AJK.

A framework approach will be used to finalize sub-projects under this component based on selection criteria[6]. This approach is being taken due to the emergency nature of the project. In addition, the component will finance preparatory work for those additional investments requiring longer preparation times. It will also support the agency implementing the infrastructure work in Punjab to further enhance their flood management systems.

Sub Component 1.2. Feasibility Studies and Diagnostics for Medium-Long Term Works (USD 15 million): This subcomponent will finance preparatory activities (feasibility studies, consulting services for surveys, designs, environmental and social impact assessments, etc.) for proposed medium-long term investments that may bring about significant improvements to flood protection and have high economic benefits. Once preparatory activities are completed, these works may also be considered for support through the framework approach.

Sub Component 1.3. Upgrading Flood Management Systems (USD 5 million): The sub-component will support the Punjab Irrigation Department for implementation of non-structural measures to enhance flood management and its related equipment upgrades and studies. Specifically, (i) *Establishment of a Decision Support System* with its required telemetry system to facilitate evidence based decision making related to selecting optimal breaching sites, managing flood peaks, and irrigation infrastructure management during flood events; (ii) *Safety evaluation of flood protection structures*, which will involve building in-house capacity at PID and providing the required equipment for structural safety assessments; (iii) *Supporting the Irrigation Research Institute* to undertake studies/ trainings on improving design, operations, and maintenance of flood protection infrastructure, and; (iv) *River morphology studies and floodplain mapping* of selected eastern rivers impacted by the 2014 floods (i.e. Jhelum and Chenab Rivers) as well as floodplain mapping for these rivers, to identify risks and possible mitigation measures.

Component 2: Upgrading Climate Infrastructure –USD 23 million

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Component 2 aims to enhance climate resilience by upgrading the national hydro-meteorological observation network and associated flood early warning systems (FEWS). The project will support improvement of hydro-meteorological information services through upgrading radar equipment, strengthening flood forecasting capability and early warning systems, and improving dissemination of hydro-meteorological information. Further, the weather forecasting system will be upgraded beyond current capabilities, to support 24 hours-per-day, 365-days-per-year operations, with forecast lead-times of 7-days, including forecast verification to assess forecast reliability. The aging radars will be replaced and upgraded while gaps in radar coverage will also be addressed through the project.

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The project will also provide advisory services to Punjab Provincial Disaster Management Fund (PDMF). The project would support the development of an appropriate governance structure, SOPs, fiduciary safeguards and controls, and transparent allocation criteria, drawing on international good practices.

The Government of Punjab used early recovery cash transfers for the floods in 2010, 2011, and 2014. The sub-component will support the development of a standard emergency cash transfer system in collaboration with the PDMA and Punjab Social Protection Authority (PSPA).

Component 4: Project Management – USD 9 million

The project will be implemented through mandated government departments including Pakistan Meteorological Department, Punjab Irrigation Department, Punjab Disaster Management Authority, and Planning and Development Department, AJK. This

component will support engagement of additional resources at Project Implementation Units within these departments.

Component 5: Contingent Emergency Response– USD 0 million

Following an adverse natural event that causes a major natural disaster, the government may request the Bank to re-allocate project funds to support response and reconstruction. This component would draw resources from the unallocated expenditure category and allow the government to request the Bank to reallocate financing from other project components to partially cover emergency response and recovery costs. This component could also be used to channel additional funds should they become available as a result of the emergency.

1.3 The Study

The various aspects of the present study, including its need and objectives, its scope, the methodology employed while conducting it are described in the following sections.

Need of the Study

The World Bank Operational Policy 4.01 (OP 4.01) and Involuntary Resettlement Policy 4.12 (OP/BP 4.12) state that "The Bank requires environmental assessment (EA) and management of social impacts of projects proposed for Bank financing to help ensure that they are environmentally and socially sound and sustainable, and thus to improve decision making"[7]. As the list of project activities and locations are not finalized, a framework approach is being taken. The Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) have been prepared to identify the potential negative environmental and social impacts, propose mitigation measures, provide basic screening criteria, list the type of instruments to be developed and provide institutional, monitoring, reporting and documentation measures for environmental and social safeguards compliance.

Study Objectives

Since the nature, extent and location of the project activities (subprojects) requiring physical intervention and thus potentially causing environmental degradation and social impacts are not known at this stage, a 'framework' approach has been adopted during the present environmental and social assessment, and an ESMF and a RPF have been prepared as the outcome of this study. The specific objectives of the present study are to:

- To assess the existing environmental and socioeconomic conditions of the project area,
- To identify potential generic impacts of the proposed project on the natural, social and human environment of the area, to predict and evaluate these impacts, and determine their significance, in light of the technical and regulatory concerns,
- To propose appropriate generic mitigation measures that should be incorporated in the design of the project (and subprojects to be designed and implemented during project implementation) to avoid or minimize if not eliminate the potentially adverse impacts,

[7] Excerpts from OP4.01 – Environmental Assessment. WB, January, 1999.

- To assess the compliance status of the proposed activities with respect to the national environmental legislation and WB's OPs,
- To provide basic screening and assessment criteria, list the type of assessment to be carried out and instruments to be developed for each subproject, and provide institutional, monitoring, reporting and documentation measures for environmental safeguards compliance.

Study Methodology

The key steps that were followed while conducting the present assessment are briefly described below.

Scoping

During this phase, key information on the project was collected and reviewed. A long list of the potential environmental as well as social issues likely to arise as a result of the project was developed. The stakeholder analysis was also carried out for the consultation which was undertaken subsequently.

Stakeholder Consultations

Stakeholder consultations were carried out during the study. Meetings were held with the institutional stakeholders and key environmental and social issues discussed. Extensive consultations with the grass root stakeholders were carried out during visits to various parts of the Province of Punjab and AJK,through Focus Group Discussions, key Informant Interviews, corner meeting and broader community meetingsin the areas of indicative sub-projects both in Punjab and AJK.

Data Collection/Compilation

During this phase, data was collected and compiled, in order to develop a baseline of the project area's physical, biological and socio-economic human environment. For this purpose, primarly review of secondary sources was carried out.

The secondary resources that were consulted included reports of the studies carried out earlier, published books and data, and relevant websites. With the help of these resources a generic profile of the entire project area was developed.

Impact Assessment

During the impact assessment, the environmental, socioeconomic, and project information collected in previous steps was used to determine the potential impacts of the indicative sub-projects. Subsequent to this, the potential impacts were characterized in order to determine their significance. Mitigation measures were identified where required to minimize the significant environmental and social impacts. A management framework was also developed in the form of an ESMF for the implementation of the mitigation measures identified during the study.

Report Compilation

Report compilation was the last step of the study. The report includes a brief description of the proposed project, a review of environmental legislation and policy framework relevant to the project, a description of baseline environmental and socioeconomic conditions in the project area, and potential project impacts and mitigation measures. (Complete structure of the report is provided in Section 1.4 below.)

1.4 Document Structure

Chapter 2 discusses the legislative, regulatory, and institutional setup that exists in the Country, as well as the World Bank's safeguard policies relevant to the environmental and social assessment. The Chapter also outlines the international environmental agreements to which the country is a party. **Chapter 3** provides a simplified description of the Project and its components. The environmental and social baseline conditions are presented in **Chapter 4**. The stakeholder consultations have been covered in **Chapter 5**. The assessment of environmental as well as socioeconomic impacts, their mitigation measures are presented in **Chapters 6**. Finally, the Environmental and Social Management Framework is presented in **Chapter 7 and Resettlement Policy Frameowrk in Chapter 8**.

2. Legislative, Regulatory, and Policy Framework

This Chapter discusses the policy, legal and administrative framework as well as institutional set-up relevant to the environmental and social assessment of the proposed Project. Also included in the Chapter are the environmental and social guidelines from the national agencies as well as international donors and other organizations.

2.1 National Laws and Regulations[8]

Pakistan's statute books contain a number of laws concerned with the regulation and control of the environmental and social aspects. However, the enactment of comprehensive legislation on the environment, in the form of an act of parliament, is a relatively new phenomenon. Most of the existing laws on environmental and social issues have been enforced over an extended period of time, and are context-specific. The laws relevant to the developmental projects are briefly reviewed below.

2.1.1 Pakistan Environmental Protection Act, 1997

The Pakistan Environmental Protection Act, 1997 (the Act) is the basic legislative tool empowering the government to frame regulations for the protection of the environment (*the 'environment' has been defined in the Act as: (a) air, water and land; (b) all layers of the atmosphere; (c) all organic and inorganic matter and living organisms; (d) the ecosystem and ecological relationships; (e) buildings, structures, roads, facilities and works; (f) all social and economic conditions affecting community life; and (g) the inter-relationships between any of the factors specified in sub-clauses 'a' to 'f'*). The Act is applicable to a broad range of issues and extends to socioeconomic aspects, land acquisition, air, water, soil, marine and noise pollution, as well as the handling of hazardous waste. The discharge or emission of any effluent, waste, air pollutant or noise in an amount, concentration or level in excess of the National Environmental Quality Standards (NEQS) specified by the Pakistan Environmental Protection Agency (Pak-EPA) has been prohibited under the Act, and penalties have been prescribed for those contravening the provisions of the Act. The powers of the federal and provincial Environmental Protection Agencies (EPAs), established under the Pakistan Environmental Protection Ordinance 1983,[9] have also been considerably enhanced under this legislation and they have been given the power to conduct inquiries into possible breaches of environmental law either of their own accord, or upon the registration of a complaint.

The requirement for environmental assessment is laid out in Section 12 (1) of the Act. Under this section, no project involving construction activities or any change in the physical environment can be undertaken unless an initial environmental examination (IEE) or an environmental impact assessment (EIA) is conducted, and approval is received from the federal or relevant provincial EPA. Section 12 (6) of the Act states that the provision is applicable only to such categories of projects as may be prescribed. The

[8] In the wake of 18th Amendment in the Constitution of Pakistan, the provinces need to enact their own laws for the subjects devolved to them. Most of the federal laws, most importantly the Pakistan Environmental Protection Act of 1997, will/have therefore be/been replaced by corresponding provincial laws.

[9] Superseded by the Pakistan environmental Protection Act, 1997.

categories are defined in the Pakistan Environmental Protection Agency Review of IEE and EIA Regulations, 2000 and are discussed in **Section 2.1.2** below.

2.1.2 Punjab Environmental Protection Act, 2012

The Punjab Environmental Protection Act, 1997 (amended 2012) is the basic legislative tool at the provincial level after the devolution of power 18th amendment, empowering the provincial government to frame regulations for the protection of the environment. The act is similar in nature to the Pakistan Environmental Protection act and refers to the Pakistan Environmental Protection Agency Review of IEE and EIA regulations as the primary guideline for preparation of environmental safeguards instruments. The regulatory powers and implementation responsibilities are now designated in the province to the Punjab Environmental Protection Agency.

2.1.3 The AJK, Environmental Protection Act, 2000

The AJK, Environmental Protection Act, 2000 empowers the AJK –Environmental Protection Agency to:

• Administer and implement the provisions of the Act and the rules and regulations made there-under to comply with the environmental policies approved by the Council;

• Enforce the provisions of the Act through environmental protection orders and environmental tribunals headed by magistrates with wide-ranging powers, including the right to fine violators of the Act.

• Prepare or revise, and establish the Environmental Quality Standards with the approval of the Council;

• Develop environmental emission standards for parameters such as air, water and land.

• Identify categories of projects to which the Initial Environment Examination (IEE) or Environmental Impact Assessment (EIA) will apply.

• Develop guidelines for conducting initial environmental examinations (IEE) and EIA's and procedures for the submission, review and approval of the same.

• Review IEE or EIA with the objectives that these meet the requirements of the Act.

• Public participation shall be ensured during review process of IEE or EIA reports.

2.1.4 Punjab Wildlife (Protection, Preservation, Conservation and Management) Act, 1974

This law was enacted to protect the province's wildlife resources directly and other natural resources indirectly. It classifies wildlife by degree of protection, i.e., animals that may be hunted on a permit or special license, and species that are protected and cannot be hunted under any circumstances. The Act specifies restrictions on hunting and trade in animals, trophies, or meat. The Act also defines various categories of wildlife protected areas, i.e., National Parks, Wildlife Sanctuaries, and Game Reserve.

The project activities will have to be carried out in accordance with this Act. In particular, no activities will be carried out inside any protected areas defined under the Act.

2.1.5 The Jammu and Kashmir Forest Regulations, 1930

The main legislation for management and protection of forest and rangeland in AJK is the Jammu and Kashmir Forest Regulation of 1930 and its later amendments of 1973, 1976, 1977 and 1980. The amendments are mostly related with penal provisions for forest offences. According to the AJK Forest Regulations, the forests are designated as 'Demarcated" or "Un-demarcated". The former forests, like Reserved Forests under Forest Act of 1927 that is in vogue in Pakistan, are under the control of Forest Department, while the latter are under the control of Board of Revenue through Deputy Commissioner. There are two other categories of forests in AJK denominated as "Village Forests" and "Private Forests". The former are established under Section 14 (a) of the AJK Forest Regulations, while the latter are established under the Private Forest Rules of AJK Land Revenue Act 1955. Moreover, "Tree Plantation & Maintenance Act 1977 has been enacted to ensure planting and maintenance of at least 3 trees per acre in farmland. Under the provision of the forest related legislations there are regulations on usufruct right of the communities or individual for using the area for grazing, acquiring wood for fuel wood or timber. However, for cutting trees for the construction of a project special permission would be needed from the Forest Department and Revenue Department/Local Administration depending upon the type of forest encountered.

2.1.6 The AJK Wildlife (Protection, Preservation, Conservation and Management) Act, 1975

In addition to empowering AJK wildlife department to establish game reserves, parks, and wildlife sanctuaries, this Act regulates the hunting and disturbance of wildlife. While reviewing the ESIA, the AJK-EPA may consult the AJK wildlife department in case the project has an impact on wildlife. The AJK-EPA may require the proponent to coordinate with the AJK wildlife department for the implementation of the project and monitoring activities during construction and operation of the project.

2.1.7 Punjab Irrigation and Drainage Authority Act, 1997

This Act aims to implement the strategy of the Government of Punjab for streamlining the Irrigation and Drainage System; to replace the existing administrative setup and procedures with more responsive, efficient and transparent arrangements; to achieve economical and effective operation and maintenance of the irrigation, drainage and flood control system in the Province; and to make the irrigation and drainage network sustainable on a long-term basis and introduce participation of beneficiaries in the operation and management.

2.1.8 Pakistan Environmental Protection Agency Review of IEE and EIA Regulations, 2000

The Pakistan Environmental Protection Agency Review of IEE and EIA Regulations, 2000 (the 'Regulations'), developed by the Pak-EPA under the powers conferred upon it by the Act, provide the necessary details on preparation, submission and review of the initial environmental examination (IEE) and the EIA. Categorization of projects for IEE and EIA is one of the main components of the Regulations. Projects have been classified on the basis of expected degree of adverse environmental impacts. Project types listed in Schedule I are designated as potentially less damaging to the environment, and those listed in Schedule II as having potentially serious adverse effects. Schedule I projects

require an IEE to be conducted, provided they are not located in environmentally sensitive areas. For the Schedule II projects, conducting an EIA is necessary.

The subprojects under the DCRIP are likely to fall under Schedule I of the Regulations.

2.1.9 National Environmental Quality Standards

The National Environmental Quality Standards (NEQS), promulgated under the PEPA 1997, specify the following standards:

- Maximum allowable concentration of pollutants in gaseous emissions from industrial sources,
- Maximum allowable concentration of pollutants in municipal and liquid industrial effluents discharged to inland waters, sewage treatment and sea (three separate set of numbers).
- Maximum allowable emissions from motor vehicles.
- Ambient air quality standards.
- Drinking water standards
- Noise standards.

The above NEQS's are presented in **Tables A.1** to **A.6** in **Annex A**. Only a few of these standards will be applicable to the gaseous emissions and liquid effluents discharged to the environment from the activities under the proposed project.

2.1.10 Land Acquisition Act, 1894

The Land Acquisition Act (LAA) of 1894 amended from time to time has been the de-facto policy governing land acquisition and compensation in the country. The LAA is the most commonly used law for acquisition of land and other properties for development projects. It comprises of 55 sections pertaining to area notifications and surveys, acquisition, compensation and apportionment awards and disputes resolution, penalties and exemptions.

The subprojects to be implemented under DCRIP may require small strips or minor patches of land. Efforts will be made to acquire such small pieces of land either through voluntary donation only if it would not adversely impact livelihood of donor and require less than 10% land owned by that person or through commercial transaction (willing buyer – willing seller) basis. For this purpose the conditions for land donation and its mechanism has been given in Annex G.

2.1.11 Forest Act, 1927

The Act authorizes Provincial Forest Departments to establish forest reserves and protected forests. The Act prohibits any person to set fire in the forest, quarry stone, remove any forest-produce or cause any damage to the forest by cutting trees or clearing up area for cultivation or any other purpose.

The project activities will have to be carried out in accordance with this Act. No activities will be carried out in any protected forests, and no unauthorized tree cutting will be carried out.

2.1.12 Canal and Drainage Act, 1873

The Canal and Drainage Act (1873) prohibits corruption or fouling of water in canals (defined to include channels, tube wells, reservoirs and watercourses), or obstruction of drainage.

This Act will be applicable to the physical works to be carried out during the proposed project.

2.1.13 Antiquity Act, 1975

The Antiquities Act of 1975 ensures the protection of cultural resources in Pakistan. The Act is designed to protect 'antiquities' from destruction, theft, negligence, unlawful excavation, trade and export. Antiquities have been defined in the Act as ancient products of human activity, historical sites, or sites of anthropological or cultural interest, and national monuments. The law prohibits new construction in the proximity of a protected antiquity and empowers the Government of Pakistan to prohibit excavation in any area that may contain articles of archeological significance.

Under this Act, the project proponents are obligated to:

- Ensure that no activity is undertaken in the proximity of a protected antiquity, and
- If during the course of the project an archeological discovery is made, it should be protected and reported to the Department of Archeology, Government of Pakistan, for further action.

This Act will be applicable to the physical interventions such as constructionactivities to be carried out during the proposed project.

2.1.14 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, mines or any other hazardous employment. In accordance with this Article, the Employment of Child Act (ECA) 1991 disallows the child labor in the country. The ECA defines a child to mean a person who has not completed his/her fourteenth years of age. The ECA states that no child shall be employed or permitted to work in any of the occupation 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. The processes defined in the Act include carpet weaving, biri (kind of a cigarette) making, cement manufacturing, textile, construction and others).

The project proponent, participating farmers and their contractors will be bound by the ECA to disallow any child labor at the project sites.

2.1.15 Pakistan Penal Code, 1860

The Code deals with the offences where public or private property or human lives are affected due to intentional or accidental misconduct of an individual or organization. The Code also addresses control of noise, noxious emissions and disposal of effluents. Most of the environmental aspects of the Code have been superseded by the Pakistan Environmental Protection Act, 1997.

2.2 The World Bank Operational Policies

The WB Operational Policies (OPs) relevant to the proposed project are discussed in the following sections.

2.2.1 Environmental Assessment (OP 4.01)

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.[10] The OP defines the EA process and various types of the EA instruments.

The proposed project may consist of activities which can potentially have environmental and social consequences, hence the policy is triggered and this instrument is being being developed. Since the activities uner the project would be rehabilitation and repair of existing structures, the level of environmental impacts is likely to be low to moderate and hence the project falls under WB Environment Category B.

2.2.2 Involuntary Resettlement (OP 4.12)

The WB's experience indicates that involuntary resettlement under development projects, if unmitigated, often gives rise to severe economic, social, and environmental risks: production systems are dismantled; people face impoverishment when their productive assets or income sources are lost; people are relocated to environments where their productive skills may be less applicable and the competition for resources greater; community institutions and social networks are weakened; kin groups are dispersed; and cultural identity, traditional authority, and the potential for mutual help are diminished or lost. This policy includes safeguards to address and mitigate these impoverishment risks.[11]

The overall objectives of the Policy are given below.

- Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs.
- 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.
- 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.

This policy is triggered as there may be loss of partial cropping area of encroached land, damages to kacha rooms built for storage of agriculture inputs and animal sheds due to some project activities. A Resettlement Policy Framework (RPF) is being prepared to define principles for mitigation measures and need for the preparation of RAPs to develop mechanism to mitigate negative social impacts, their implementation, costing, scheduling and monitoring.

2.2.3 Forestry (OP 4.36)

The objective of this Policy is to assist the WB's borrowers to harness the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into

[10] Excerpts from WB OP 4.12.WB Operational Manual. January 1999.

[11] Excerpts from WB OP 4.12.WB Operational Manual. December 2001.

sustainable economic development, and protect the vital local and global environmental services and values of forests.

None of the project components would be located inside any forested areas. Hence the OP 4.36 is not triggered.

2.2.4 Natural Habitat (OP 4.04)

The conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank therefore supports the protection, maintenance, and rehabilitation of natural habitats and their functions …[12]

All of the proposed project components would be located in areas where the natural habitat has already been significantly modified, as a result of cultivation and associated activities. No subproject would be established inside or in the immediate vicinity of protected area (list provided later in the document). Hencethe OP 4.04 is not triggered for the proposed project.

2.2.5 Pest Management (OP 4.09)

Through this OP, the WB supports a strategy that promotes the use of biological or environmental control methods and reduces reliance on synthetic chemical pesticides.

As the project is not financing any procurement of pesticides and other agro-chemicals, and there will be no activities engaging with pesticide, this policy is not triggered.

2.2.6 Safety of Dams (OP 4.37)

The Policy seeks to ensure that appropriate measures are taken and sufficient resources provided for the safety of dams the WB finances. However this OP is not relevant since the proposed project does not involve construction of dams.

2.2.7 Projects on International Waterways (OP 7.50)

This OP defines the procedure to be followed for projects the WB finances that are located on any water body that forms a boundary between, or flows through two or more states. Since some project activities may be located on international waterways, this policy is triggered. However, the other riparians will not be impacted since they are located upstream of proposed activities under the project. Additionally, the project activities are not expected to be adversely affected by the upstream riparians' possible water use. Hence the project falls under the exception to notification requirement and the exception has been obtained in compliance with the OP.

2.2.8 Physical Cultural Resources (OP 4.11)

The World Bank's general policy regarding cultural properties is to assist in their preservation, and to seek to avoid their elimination. The specific aspects of the Policy are given below. [13]

- The Bank normally declines to finance projects that will significantly damage non-replicable cultural property, and will assist only those projects that are sited or designed so as to prevent such damage.

[12] Excerpts from WB OP 4.04.WB Operational Manual. June 2001.

[13] Excerpts from the OPN 11.03.WB Operational Manual. September 1986.

- The Bank will assist in the protection and enhancement of cultural properties encountered in Bank-financed projects, rather than leaving that protection to chance. In some cases, the project is best relocated in order that sites and structures can be preserved, studied, and restored intact in situ. In other cases, structures can be relocated, preserved, studied, and restored on alternate sites. Often, scientific study, selective salvage, and museum preservation before destruction is all that is necessary. Most such projects should include the training and strengthening of institutions entrusted with safeguarding a nation's cultural patrimony. Such activities should be directly included in the scope of the project, rather than being postponed for some possible future action, and the costs are to be internalized in computing overall project costs.
- Deviations from this policy may be justified only where expected project benefits are great, and the loss of or damage to cultural property is judged by competent authorities to be unavoidable, minor, or otherwise acceptable. Specific details of the justification should be discussed in project documents.
- This policy pertains to any project in which the Bank is involved, irrespective of whether the Bank is itself financing the part of the project that may affect cultural property.

Since the project activities will be carried out in or near the cultivated fields, it is unlikely that any sites of cultural, archeological, historical, or religious significance will be affected. However, in case of discovery of any such sites or artifacts during the project implementation, the work will be stopped at that site and the provisions of this Policy will be followed. Additionally, the provincial and federal archeological departments will be notified immediately, and their advice sought before resumption of the construction activities at such sites.

2.2.9 Indigenous People (OP 4.10)

For purposes of this policy, the term "Indigenous Peoples" is used in a generic sense to refer to a distinct, vulnerable, social and cultural group possessing the following characteristics in varying degrees:[14]

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

The OP defines the process to be followed if the project affects the indigenous people.

There are no known indigenous groups in the project area as identified under OP4.10. Therefore, this OP is not triggered. The only identified indigenous people are in Kalash valley in the northern Pakistan (Chitral district of Khyber Pakhtunkhwa province), as a result of Bank screening exercise done in the past.

[14] Excerpts from the OP 4.10.WB Operational Manual. July 2005.

2.2.10 World Bank Policy on Access to Information 2010

The World Bank recognizes that transparency and accountability are of fundamental importance to the development process and to achieving its mission to alleviate poverty. Transparency is essential to building and maintaining public dialogue and increasing public awareness about the Bank's development role and mission. It is also critical for enhancing good governance, accountability, and development effectiveness. Openness promotes engagement with stakeholders, which, in turn, improves the design and implementation of projects and policies, and strengthens development outcomes. It facilitates public oversight of Bank-supported operations during their preparation and implementation, which not only assists in exposing potential wrongdoing and corruption, but also enhances the possibility that problems will be identified and addressed early on.15

In accordance with this Policy, the present ESMF and RPF will be disclosed to public and also sent to the WB InfoShop. The ESMF and RPF, and their Urdu translations will be available at the official websites of the Implementing Agencies. In addition, if the screening process concludes that the subproject is likely to have low to moderate level of negative environmental and / or social impacts, the subproject specific ESMPs and RAPs (the latter if needed) shall also be available on the official websites of IAs and the WB InfoShop. For all other subprojects potentially causing low level of environmental and / or social impacts, the subproject assessment and mitigation checklists will be held on file at the IA through the length of the project.

2.2.11 Applicability of Safeguard Policies

Applicability of the WB safeguard policies – on the basis of the discussion in **Sections 2.2.1** to **2.2.11** above - with respect to the environmental and social issues associated with the proposed project is summarized below.

Operational Policy	Triggered
Environmental Assessment (OP 4.01)	Yes
Involuntary Resettlement (OP 4.12)	Yes
Forestry (OP 4.36)	No
Natural Habitat (OP 4.04)	No
Pest Management (OP 4.09)	No
Safety of Dams (OP 4.37)	No
Projects in International Waters (OP 7.50)	Yes
Cultural Property (OP 4.11)	No
Indigenous People (OP 4.10)	No
Policy on Access to Information	Yes

15 Excerpts from the World Bank Policy on Access to Information. World Bank, July 2010.

2.3 Obligations under International Treaties

Pakistan is signatory of several Multilateral Environmental Agreements (MEAs), including:

- Basel Convention,
- Convention on Biological Diversity, Convention on Wetlands (Ramsar),
- Convention on International Trade in Endangered Species (CITES),
- UN Framework Convention on Climate Change (UNFCCC),
- Kyoto Protocol,
- Montreal Protocol,
- UN Convention to Combat Desertification,
- Convention for the Prevention of Pollution from Ships (MARPOL),
- UN Convention on the Law of Seas (LOS),
- Stockholm Convention on Persistent Organic Pollutants (POPs),
- Cartina Protocol.

These MEAs impose requirements and restrictions of varying degrees upon the member countries, in order to meet the objectives of these agreements. However, the implementation mechanism for most of these MEAs is weak in Pakistan and institutional setup mostly nonexistent.

The MEA most applicable for the Project is the Stockholm Convention on Persistent Organic Pollutants (POPs), under which certain pesticides such as dichloro diphenyl trichloroethane (commonly known as DDT) cannot be used.

2.4 Institutional Setup for Environmental Management

The apex environmental body in the country is the Pakistan Environmental Protection Council (PEPC), which is presided by the Chief Executive of the Country. Other bodies include the Pakistan Environmental Protection Agency (Pak-EPA), provincial EPAs (for four provinces, Azad Jammu and Kashmir and Gilgit-Baltistan), and environmental tribunals.

The EPAs were first established under the 1983 Environmental Protection Ordinance; the PEPA 1997 further strengthened their powers. The EPAs have been empowered to receive and review the environmental assessment reports (IEEs and EIAs) of the proposed projects, and provide their approval (or otherwise).

The proposed project would be located in the Punjab and AJK Province.

2.5 Environmental and Social Guidelines

Two sets of guidelines, the Pak-EPA's guidelines and the World Bank Environmental Guidelines are reviewed here. These guidelines address the environmental as well as social aspects.

2.5.1 Environmental Protection Agency's Environmental and Social Guidelines

The Federal EPA has prepared a set of guidelines for conducting environmental assessments. The guidelines derive from much of the existing work done by international donor agencies and non-governmental organizations (NGOs). The package of regulations, of which the guidelines form a part, includes the PEPA 1997 and the NEQS. These guidelines are listed below.

- Guidelines for the Preparation and Review of Environmental Reports,
- Guidelines for Public Consultation,
- Guidelines for Sensitive and Critical Areas,
- Sectoral Guidelines.

It is stated in the Pakistan Environmental Protection Agency Review of IEE and EIA Regulations, 2000 that the EIA or IEE must be prepared, to the extent practicable, in accordance with the Pakistan Environmental Protection Agency Environmental Guidelines.

The ESMP to be prepared for the subprojects under DCRIP will broadly follow the above guidelines however compliance with the WB safeguard requirements would be mandatory.

2.5.2 World Bank Environmental and Social Guidelines

The principal World Bank publications that contain environmental and social guidelines are listed below.

- Environment, Health, and Environment (EHS) Gudeilines prepared by International Finance Corporation and World Bank in 2007.
- Pollution Prevention and Abatement Handbook 1998: Towards Cleaner Production
- Environmental Assessment Sourcebook, Volume I: Policies, Procedures, and Cross-Sectoral Issues.
- Social Analysis Sourcebook.

The ESMP and checklists to be prepared for the subprojects under DCRIP would need to comply with the above guidelines. In case of any conflict between the above guidelines and the ones discussed under Section 2.5.1, the WB guidelines will be followed.

3. Project Description[16]

This Chapter describes various aspects of the proposed project including its components, and activities under each component. The safeguard instrument (ESMP, or Checklist) for each subproject will include subproject description.

The project aims to support restoration of flood protection infrastructure and strengthen government capacity to manage disasters and climate variability.

A. Project Beneficiaries

Direct beneficiaries include the population of Punjab and AJK affected by the 2014 floods and exposed to recurrent flooding in Chenab, Jhelum and Indus rivers, where flood protection infrastructure will be restored to resilient standards, particularly in the irrigation zones of DG Khan, Sargodha, Bahawalpur, Multan and Faisalabad in Punjab and the districts of Neelum, Hattian, Bagh, Poonch, Haveli, Kotli, Bhimber and Muzaffarabad of AJK. Additionally in these districts, beneficiaries would include those exposed to landslide risk - exacerbated during periods of high precipitation and flooding – in selected districts where landslide stabilization works will take place.

Through technical assistance and institutional strengthening of disaster management and irrigation authorities, the entire population of Punjab and AJK will indirectly benefit from increased capacity to identify, manage and respond to disasters. With the engagement of the Pakistan Meteorological Department in flood forecasting and early warning systems, the entire country will benefit from increased lead-time and better disaster risk management.

PROJECT DESCRIPTION

B. Project Components

Component 1: Restoring flood protection infrastructure and upgrading flood management systems– USD 100 million

Component 1 aims to enhance physical resilience through the restoration, rehabilitation and improvement of critical flood protection infrastructure.

Subcomponent 1.1. Flood Protection Works (USD 80 million): This subcomponent will finance the restoration of flood protection infrastructure damaged during 2014 flood in Punjab and AJK. These investments will include:

c) Restoration of flood embankments to resilient standards
d) Rehabilitation of other infrastructure such as spurs and river channelization works

Potential flood mitigation investments in Punjab and AJK include some works that are at an advanced stage of readiness and could be taken up under this subcomponent in the short term. The Government has shared a prospective list of ready investments with the Bank in this regard. The financing requirements for these immediate works are USD 65 million in Punjab and USD 15 million for AJK.

[16] Adopted from the Project Appraisal Document (PAD), prepared by WB.

A framework approach will be used to finalize sub-projects under this component based on selection criteria[17]. This approach is being taken due to the emergency nature of the project. In addition, the component will finance preparatory work for those additional investments requiring longer preparation times. It will also support the agency implementing the infrastructure work in Punjab to further enhance their flood management systems.

Sub Component 1.2. Feasibility Studies and Diagnostics for Medium-Long Term Works (USD 15 million): This subcomponent will finance preparatory activities (feasibility studies, consulting services for surveys, designs, environmental and social impact assessments, etc.) for proposed medium-long term investments that may bring about significant improvements to flood protection and have high economic benefits. Once preparatory activities are completed, these works may also be considered for support through the framework approach.

Sub Component 1.3. Upgrading Flood Management Systems (USD 5 million): The sub-component will support the Punjab Irrigation Department for implementation of non-structural measures to enhance flood management and its related equipment upgrades and studies. Specifically, (i) *Establishment of a Decision Support System* with its required telemetry system to facilitate evidence based decision making related to selecting optimal breaching sites, managing flood peaks, and irrigation infrastructure management during flood events; (ii) *Safety evaluation of flood protection structures*, which will involve building in-house capacity at PID and providing the required equipment for structural safety assessments; (iii) *Supporting the Irrigation Research Institute* to undertake studies/ trainings on improving design, operations, and maintenance of flood protection infrastructure, and; (iv) *River morphology studies and floodplain mapping* of selected eastern rivers impacted by the 2014 floods (i.e. Jhelum and Chenab Rivers) as well as floodplain mapping for these rivers, to identify risks and possible mitigation measures.

Component 2: Upgrading Climate Infrastructure –USD 23 million

Component 2 aims to enhance climate resilience by upgrading the national hydro-meteorological observation network and associated flood early warning systems (FEWS). The project will support improvement of hydro-meteorological information services through upgrading radar equipment, strengthening flood forecasting capability and early warning systems, and improving dissemination of hydro-meteorological information. Further, the weather forecasting system will be upgraded beyond current capabilities, to support 24 hours-per-day, 365-days-per-year operations, with forecast lead-times of 7-days, including forecast verification to assess forecast reliability. The aging radars will be replaced and upgraded while gaps in radar coverage will also be addressed through the project.

Component 3: Managing Disasters –USD 18 million

Component 3 aims to strengthen the government's capacity to better manage disasters. This component would finance risk identification, institutional strengthening for improved management of disasters and enhancing fiscal resilience.

[17]These criteria will inter alia include: (i) economic impact; (ii) technical readiness and feasibility criteria; (iii) demand by local communities; (iv) implementation duration; and, (v) scale of safeguards issues and mitigation costs. As and when the selection criteria are met, subprojects would be financed.

Subcomponent 3.1. Risk Identification (USD 2 million): This subcomponent will focus on identifying the risk environment for informed planning and decision-making, development of framework to undertake the assessments, as well as tools to allow the optimal utilization of risk information. Specifically a) Studies on urban and flash flooding in Punjab and; b) Slope stabilization studies in AJK

Subcomponent 3.2. Institutional Strengthening for DRM (USD 12 million): This subcomponent will provide support towards strengthening the DRM institutional structure as well as building capacity and equipping the Disaster Management Authorities in Punjab in AJK will include: a) Institutional and policy review; b) Strengthening of DMAs down to district level; and c) Mainstreaming DRM in the planning process in collaboration with Planning and Development (P&D) Department, Punjab.

Subcomponent 3.3. Fiscal Resilience (USD 4 million): The subcomponent will support the Federal and Punjab governments to develop a National Disaster Risk Finance Strategy. The strategy will formalize objectives and scope, evaluate various financial instruments to finance contingent liability to natural disasters, and recommend implementation of selected instruments.

The project will also provide advisory services to Punjab Provincial Disaster Management Fund (PDMF). The project would support the development of an appropriate governance structure, SOPs, fiduciary safeguards and controls, and transparent allocation criteria, drawing on international good practices.

The Government of Punjab used early recovery cash transfers for the floods in 2010, 2011, and 2014. The sub-component will support the development of a standard emergency cash transfer system in collaboration with the PDMA and Punjab Social Protection Authority (PSPA).

Component 4: Project Management – USD 9 million

The project will be implemented through mandated government departments including Pakistan Meteorological Department, Punjab Irrigation Department, Punjab Disaster Management Authority, and Planning and Development Department, AJK. This component will support engagement of additional resources at Project Implementation Units within these departments.

Component 5: Contingent Emergency Response– USD 0 million

Following an adverse natural event that causes a major natural disaster, the government may request the Bank to re-allocate project funds to support response and reconstruction. This component would draw resources from the unallocated expenditure category and allow the government to request the Bank to reallocate financing from other project components to partially cover emergency response and recovery costs. This component could also be used to channel additional funds should they become available as a result of the emergency.

C. IMPLEMENTATION

The activities and investments under the Project will be implemented at: a) Federal Level; b) Province of Punjab; and, c) AJK. While Components 1 and 3 will be implemented in Punjab and AJK only, the bulk of activities under Component 2 need to be implemented at the Federal Level.

The project envisages the use of existing government structures for implementation. Restoration activities in Punjab would be led by the Punjab Irrigation Department (PID), while DRM capacity building activities would be undertaken by the Provincial Disaster Management Authority (PDMA). At the Federal level, the Pakistan Meteorological Department (PMD) would lead implementation of the hydro-meteorology component. These departments would dedicate resources to PIUs established at these departments. Further, a dedicated PIU has already been established at the Planning and Development (P&D) Department, AJK.

The departments through their respective PIUs would have responsibility for project implementation including, but not limited to, 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 PIU will be adequately resourced with skillsets and competencies required for project implementation and monitoring.

4. Environmental and Social Baseline Conditions

This Chapter presents an overall profile of the existing environmental and socioeconomic situation in the Punjab and AJK as the baseline conditions for project and it's ESMF, since the sites for the interventions included in the proposed project are likely to be spread all over the Province. This baseline has been prepared based upon the secondary literature resources[18]. Safeguard instrument (ESMP or Checklist) to be prepared for each subproject will include subproject-specific baseline conditions.

4.1 Punjab Environmental and Social Baseline

This section provides a quick overview of the baseline environmental and social profile of the project's geophysical extent i.e. the entire province of Punjab, A map showing geophysical features of the Punjab is placed at the end of this section. A map of key features is shown in Figure 4.1

4.1.1 Geography

The province of Punjab having 205,345 sq.km area and a population of about 90 million is bound on the north by Kashmir, on the east by international border with India, on the south by Sindh province, and on the west by the provinces of Balochistan and Khyber-Pakhtunkhwa.

4.1.2 Topography

The province of Punjab is predominantly a fertile region along the river valleys. However sparse deserts can be found in southern parts of the province. Owing to its geographical disposition, the province exhibits wide variations of physical, ecological, socio-cultural and environmental features down from north to south and across from east to west. Topographically, Punjab can be divided into following five land forms:

- Upper hilly region

[18] Sources include: Atlas of Pakistan; Survey of Pakistan, 1997.
Punjab Development Statistics, Government of Punjab, as on 31.12.2007
Punjab Sustainable Development Strategy, Environment Protection Department, GoPb, Final Report,
Informatory Brochure on Tourism Development Corporation of Punjab on Murree Hills
Geography of Punjab, Sang-e-Meel Publication, Lahore, 2007
Geological Survey of Pakistan <www.gsp.com.pk>, accessed on 07.01.
Punjab Sustainable Development Strategy, Environment Department, Punjab, 2008
Office Papers, Irrigation Department, Government of Punjab, 2008
Punjab Sustainable Development Strategy, Environment Department, Punjab, 2008
Water Quality Status in Pakistan, Pakistan Council of Research in Water Resources, Islamabad, 2003
Punjab Sustainable Development Strategy, Environment Department, Punjab, 2008
Subsoil Water Quality Monitoring in 14 Districts of the Punjab, Environment Protection Department, Government of the Punjab, 2003
Punjab Development Statistics, Bureau of Statistics, GoPb, 2007
Meteorological Profile of Punjab, Pakistan Meteorology Department, Lahore, 2008 (soft copy)
3-Cities Investigation of Air and Water Quality (Lahore, Rawalpindi, Islamabad), JICA/Pak-EPA, 2001
2-Cities Investigation of Air and Water Quality (Gujranwala and Faisalabad), JICA/Pak-EPA,2003
Air Quality Monitoring in Six Districts of Punjab using Physico-Chemical Techniques, Environment Protection Department, Government of the Punjab, 2005
Punjab Sustainable Development Strategy, Environment Department, Punjab, 2008
Brief on Punjab Forest Department, Punjab Forestry Research Institute, Faisalabad, 2006
Punjab Sustainable Development Strategy, Environment protection Department, Government of the Punjab, Final Report, 2008
Azad Jammu and Kashmir, At a Glance – Planning and Development Department, Muzaffarabad, Government of AJK, 2013.

- Potohar plateau
- Central plain lands (Doab)
- Desert like plains
- Cholistan and Thal deserts

The upper hilly region is a southward continuation of the Himalaya foothills of Kashmir. High rainfall, coniferous trees, and a cold weather characterize the region. The Potohar plateau, which also includes the Salt Range, is a land of undulating terrain. It lies in between Rivers Indus and Jhelum. Besides a number of important archaeological sites, the region is distinguished by diverse wildlife. The central part of the province comprises low-lying flood plains along the rivers. This geographical aspect has facilitated large scale cultivation, development of an extensive irrigation network, construction of roads, railways and other infrastructure. The general trend of gradient in plains is from north to south and from west to east. The desert like pains present transition zones between flood plains and the deserts of Cholistan and Thal. Development of surface irrigation to some extent has transformed their morphology into irrigable tracts. Thal and Cholistan exhibit true desert features. Cholistan, locally known as Rohi, pans over an area of 16,000 km^2. It continues into the Sindh province under the name Thar, and into India as Rajhistan.

4.1.3 Geology

Approximately 70 percent land area of the province comprises flood plans of Indus basin. Geologically, lands in the flood plains are lightly mantled with alluvial deposits transported from the Himalaya foothills. The underlying bedrock is composed of Precambrian metamorphic and tertiary consolidated rocks. The overlying alluvium consists of Pleistocene to recent unconsolidated deposits of sand, clay and silt. The formation age of the alluvium also dates from Pleistocene to recent, the latter being predominant earth river banks and the former around the central part of the plains.

4.1.4 Soil Morphology

The texture, morphology and moisture holding capacities of the soil in the province vary from region to region. The surface crust soils are composed of alluvial deposits consisting of silt, clay, sand and loam. Clay and silt formations occur in discontinuous layers with limited lateral extent. Their thickness is generally less than three meters. Due to rich surface irrigation in the central Punjab, the fertile soil of the flood plains give a good per unity yield.

4.1.5 Seismology

According to the seismic mapping of Pakistan, most parts of the province lie in zone "2A" of the Earthquake Zones Classification of the Uniform Building Code (UBC-1997) of the United States. This zone is associated with unknown geologic conditions and the earthquake damage is "moderate". However, earthquakes of magnitude up to five on the Richter scale, which generate ground acceleration up to 0.1g, have been reported for this zone.

4.1.6 Surface Hydrology

The major surface water resources in the province are rivers, canals drawn from the rivers and some wetlands. The major rivers are Indus and its tributaries (Jhelum,

Chenab, Ravi, Sutlej, and Bias) Under the Indus Water Treaty (IWT), waters of the three eastern rivers (Ravi, Sutlej and Bias) have been appropriated to India and of the western rivers (Indus, Jhelum and Chenab) to Pakistan. However, to meet irrigation needs of the command areas of the eastern rivers, waters from the western rivers have been diverted into the eastern rivers through the link canals. The link canals are conduits for water transfer only and are not used for irrigation. However, they help in ground water recharge. There are 12 such link canals. Structurally, the surface irrigation system comprises major canals, minor canals, branch canals, distributaries, and water courses up to farm-gate.

4.1.7 Groundwater

Availability and quality of ground water, the depth of water table, and the aquifer recharge rates considerable differ from area to area depending on a number of variables such as amount of precipitation, proximity to surface water channels, and other meteorological factors. About 79 percent of the province has fresh groundwater. High fluoride content is found in groundwater of the Salt Range. Water table varies from a slow as 1 meter in the waterlogged areas to as deep as 90 meters in the desert areas. The groundwater is drawn through hand-pumps, tube-wells, springs, and public water supply schemes. Table 4.1 to 4.3 present typical groundwater quality of a few selected districts of the province, i.e. Rawalpindi (Upper Punjab), Sheikhupura (Central Punjab) and Bahawalpur (lower Punjab).

4.1.8 Meteorology, Climate and Air Quality

The general pattern of climate change in the upper Punjab is characterized by a relatively higher rainfall (approx. 1,000 mm compared to provinces' average of 350 mm per annum), high humidity, low temperatures and heavy monsoon precipitation. Southern Punjab has a hot and dry climate with low rainfall. Summers are hot with moderate humidity, while winters exhibit extreme cold. Spring and autumns seasons are the most pleasant parts of the year. Mean winter temperature in the plains and the desert areas range between 8.5 degrees C and 2.5 degrees C. The mean summer temperature remains around 35 degrees C to 39 degrees C, with spikes crossing 42 degrees C. The mean of the maximum temperature ranges between 29 to 30 degrees C and mean of the minimum, from 15 to 16 degrees C. Approximately 50% of the average annual rainfall occurs during monsoon in the months of July and August. The past climatic records indicate that rain-rich years occurred at a cycle of 15 to 120 years with intervening dry period. A joint air quality study of Lahore, Rawalpindi and Islamabad by the Pak-EPA showed that the average suspended particulate matter in the study districts was 6.4 times higher than WHO guidelines values. The levels of sulphur dioxide, carbon monoxide and oxides of nitrogen also exceeded the acceptable standards in some areas, but the average levels were below the guideline values. Another similar study of Gujranwala and Faisalabad also revealed higher concentrations of SPM in the ambient air. However, barring congested urban centers, air quality in the province generally conforms to WHO guidelines values.

4.1.9 Forests, Habitats and Ecologically Sensitive Areas

The forest resources of the province include Coniferous forests, scrub forests, riverine bela forests, irrigated plantations, linear plantations and range lands.

The existing natural habitat of the province is largely modified habitat owing to human interventions. Construction of an extensive irrigation network during early 20th century paved the way for transformation of the tropical thorn forest into agricultural lands. This has led to changed landscape and loss of wildlife. Nine habitat types have been identified in the province, of which, deserts, sub-tropical deciduous and wetlands are of concern with regard to threat to wildlife. The major habitats along with their geographical areas are as under (*source: Forest Department Punjab)*:

- Coniferous Forests, Murree, Kahuta (District Rawalpindi)
- Tropical Deciduous Forests, Margalla Hills Mountain Foothills (District Jhelum)
- Dry Subtropical Forests Potohar Region, Salt Range (Districts Chakwal, Khushab, Mianwali, Jhelum, Rawalpindi and D.G. Khan)
- Tropical Thorn Forests Indus Floodplains
- Tropic Thorn Forests (Sandy) Cholistan, Thal (Distrcits Bahawalpur, Rahimyar Khan, Layyah and Rajanpur)
- IrrigatedForestPlantationsModifiedhabitatcarvedofTropicalThornForests
- Rivers, Wetlands, and Waterlogged Areas throughout the Punjab
- Farmlands/Agricultural Areas Throughout the Punjab
- Urban parks and open areas in urban centers

In order to preserve the natural habitat, Government has notified 63 ecologically protected areas comprising wildlife sanctuaries, national parks and game reserves

4.1.10 Land Use / Agricultural Profile

Agriculture is the predominant economic activity of 64 percent rural population of the province. About 50 percent of total labor force in the province is employed in agriculture. More than 70 percent cropped area of the Indus Basin is located in Punjab. The principal sources of irrigation are the surface channels supplemented by tube-wells. Rainfall accounts only for a small proportion of the irrigation sources. Sericulture, horticulture, and aviculture are gaining popularity. Investments in honeybee- sheep-, goat-, fish-, poultry-, and dairy-farming are also increasing. The major seasonal crops include wheat, rice, maize, sugarcane, and vegetables. Other agricultural products include fodder, fresh vegetables, and lattice. The reported agricultural area of the province is 17.62 million hectares, out of which 71 percent is cultivated and the remaining is uncultivated.

The land use in the Punjab has been exhibiting change from agricultural to residential and built-up structures. Whereas, land use in the urban centers is predominantly of fixed and permanent structures, it is of mixed disposition in the suburbs and along outer rim of the cities, where agricultural lands interpose with new constructions, inhabitations, and farmhouses.

4.1.11 Socio-economic Environment

Punjab is the hub of economic activities in the country. Opportunities exist in business, economic, trade, social, educational, and other business activities. A large section of the population is absorbed in services sector, in the army, and in the civil service. Many are working abroad as expatriates.

However, still the majority are absorbed in the agricultural sector. The mean income level of the city residents is higher than their rural counterparts. There are more than 3.5 million registered vehicles in the province, which number is increasing with every passing day. Communication system in the form of regular landlines and mobile telephony is one of the fast growing areas of economy.

4.1.12 Demographic Profile

Punjab is a thickly populated province and has average population density of 358 persons per square km. The population of the province constitutes 55.6 percent of country's total population. The population of the province, which was 73.6 million in the 1998 Census, is now crossing 90 million. The average population growth rate is 2.48 percent per annum. With the existing growth rate, the population is expected to double by 2025. Urban population has increased from 31 percent in 1998 to about 36percent in 2007. Overall sex ratio is 107 males per 100 females. Lahore is the most populated district of the province with population density of 3,566 persons per square km. Children below fifteen years of age constitutes approximately 40 percent of province's population.

4.1.13 Healthcare Facilities

Punjab has a reasonable network of healthcare services in the public sector ranging from primary to tertiary and even up to specialized healthcare facilities. There is a good number of tertiary level teaching hospitals in the province. The province has 308 hospitals and 1333 dispensaries. Table 4.5 presents status of healthcare facilities in Punjab. There are more than 59 thousand registered doctors, 45 thousand nurses, 9 thousand lady health visitors, 7,000 midwives and 500 *dais*. The mortality rates in the province are generally higher than the accepted international standards and the health indicators present a dismal status as shown in Table 4.6.On the lines of PESRP, Government of Punjab is also implementing a reform program in the health sector, "Punjab Health Sector Reforms Program". Generally, the awareness among the masses about health and personal hygiene is very low. According to the MICS, only 41 percent households use soap to wash their hands before eating and only 55 percent wash their hands adequately after attending toilet. Only 52 percent households are aware of the need for iodized salt.

4.1.14 Educational Facilities

The educational facilities in the province range from primary level, masjid-maktab schools up to universities and certain specializes institutions. There is a separate scheme of technical and vocational institutions as well as teach training colleges. Education facilities for disabled children are provided by a separate Department of Special Education. The province has 52 thousand primary schools, 7 thousand middle schools, 5 thousand high schools and 672 intermediate and degree colleges. More than 25 universities, both in the public and private sector, are catering for higher education and research. Public sector enrollments at primary level are 5.8 million, at middle level 2.1 million, at high school level 0.85 million, and at college level 10.66 million. The percentage share of Punjab's enrolments to the country's total enrolments is 27.4 percent for primary, 45.3 percent for middle, 44.9 percent for high, and 65.5 percent for college and the higher. Literacy in the province has recorded steady uphill trend from 27.4 in 1951 to 55.2 in 2005-6. The combined literacy rate in urban areas is 70.2 with male literacy rate at 78 and female literacy rate at 66 percent. The literacy rate in rural areas is 59 for male and 35 percent for female.

4.1.15 Infrastructure Profile

There are wide variations in the availability of infrastructure facilities in the urban and rural areas as well as in different regions of the province. Whereas availability and condition of roads in the cities is fair, it is deplorable in rural areas. As a part of its development agenda, the Government is focusing attention on the construction of farm to market roads in the province and building of infrastructure under the Annual Development Program (ADP) and the Public Sector Development Program (PSDP). Construction of roads under various programs has substantially improved agricultural marketing and timely transportation of the farm produce to markets.

4.1.16 Labor and Employment

Country's labor force is estimated as 43 million, out of which nearly 55.9% is in the Punjab. About 70 percent of Punjab's labor force is in rural areas and 30 percent in urban areas. Migration of people from rural to urban areas for employment opportunities and better socioeconomic conditions is an unending phenomenon in the province. Growth of urban centers (e.g., development of Lahore as a metropolis), and establishment of industrial estates / enterprises have all contributed towards increased employment opportunities in the province. The number of employed people has doubled in during 1972 to 2002. However, the number of unemployed people has recorded eightfold increase during the same period, mainly because of high population growth rate. Investments in social sectors such as education, health, housing, water and sanitation, agriculture, transport, infrastructure, and communications, etc. have not kept pace with rapidly growing population. The province of Punjab has over 18,000 large and medium industrial units, 59,126 small factories, and 90,995 cottage units, absorbing a total labor force of 62,000 persons.

4.1.17 Culture, Religion, and Customs

The province of Punjab is rich with magnificent cultural heritage of ancient times and of early Islamic period, reflected through specimens of art, craft, literature, and architect. Bhangra and Luddi are two popular dances. The population predominantly consists of Muslims. Punjabi is the native language and spoken widely, particularly in rural areas. However, other languages like Hindkoh, Balochi, Potohari, and Saraiki are also spoken in certain areas.

People generally respect *chadar and chardewari*, i.e. they do not mingle with womenfolk publically and stay away from others houses and respectfully wait to be called in or the residents to come out from their houses. A reasonable proportion of womenfolk observe the purdah etiquette, i.e. they remain secluded from outsiders. However, women do participate in almost all sort of social, cultural, economic, educational, and service activities.

Joint family system is generally prevalent in the province, especially in rural area. However, nucleus or small family is fast emerging in metropolis and urban centers because of the socio economic compulsions and attitudinal shifts in the youth.

4.1.18 Gender Issues

Women in Pakistan are among the poorest and the most vulnerable sections of the society. Women's access and control over productive resources is limited, which

ranks Pakistan amongst the highest in the world for maternal and infant mortality rates. Vulnerability of women to discriminatory treatment varies across classes, region, and the urban / rural populations. The 2007 Human Development Report ranks Pakistan at 135 out of 177 countries in terms of human development index and at 107 out of 140 in the gender related index. The dependency and vulnerability rates are estimated to be around 47 percent. However, the actual dependency is believed to be much higher than the official figures because approximately 69 percent population consists of women, children, and the aged who all can be classified as vulnerable. Another reason of dependency is low participation of women in economic activities. Presently, women comprise less than 5 percent of the public sector employees in the province. Those who are employed have limited horizontal mobility and are limited to social sector departments like education and health. Representation of women at the decision making level is only 3 percent.

The Government's major initiative of empowering the women is the Gender Reform Action Program (GRAP), which is designed to trigger actions that will result in gender mainstreaming. GRAP focuses primarily on institutional change to achieve gender equity.

4.1.19 Poverty

Incidence of poverty in the province is estimated at 32 percent (36 percent urban and 26 percent rural), which is quite high. Despite government's interventions, poverty is increasing with passage of time. In case of urban areas, poverty is more evident in slums and *katchi abadies*. The southern Punjab has higher prevalence of poverty compared to central and upper Punjab. The main causes of poverty are traditional agricultural practices, fragmented landholdings, non-availability of safe drinking water and sanitation facilities, low literacy rate, inadequate institutional arrangements for addressing social sector problems, and lack of access to social justice system.

4.2 AJK Environmental and Social Baseline

This section provides a quick overview of the baseline environmental and social profile of the project's geophysical extent, i.e. the entire State of AJK. A map of the province showing key social and environmental features is shown in Figure 2.

4.2.1 Geography and Topography

The state of Azad Jammu and Kashmir lies between longitude 73 – 75 degrees and latitude 33 – 36 degrees and comprises an area of 5,134 square miles (13,297 square kilometers). AJK falls within the Himalayan belt. As such, its topography is mainly hilly and mountainous, characterized by deep ravines, rugged, and undulating terrain. The northern districts (Neelum, Muzaffarabad, Hattian, Bagh, Haveli, Poonch, and Sudhnoti) are generally mountainous while southern districts (Kotli, Mirpur, and Bhimber) are relatively plain. The mountain ecosystems are relatively unstable and have low inherent productivity. Within this fragile environment, however, there is a great variety of ecological niches upon which people base their livelihood. Small land holdings and scarcity of cultivable land are the main factors limiting on-farm income. The area is full of natural beauty with thick forest, fast flowing rivers and winding streams. Main rivers are Jhelum, Neelum and Poonch.

4.2.2 Climate

Depending on the altitude that varies from 360 meters in the south to 6,325 meters in the north, AJK has a wide range of climatic conditions. The south has dry sub-tropical climate while the north most moist temperate. There is significant variation in the rainfall pattern across different regions both in terms of amount and distribution. Average annual rainfall ranges from 1000mm to 2000 mm. In AJK 30% to 60% precipitation is in the shape of snow. In winter snow line is around 1200 meters while in summer it is 3300 meters. Average maximum temperature ranges from 20°C to 32°C while the average minimum temperature range is 04°Cto 07°C

4.2.3 Soil

Based on the location the soil in AJK can be broadly grouped into 03 categories:

- Soil of mountain plateau is generally leached and relatively infertile.
- Soil of mountain slopes is gravelly loam, shallow and deficient in organic matter.
- Soil of inter-mountainous valleys is alluvial with a high agricultural potential.

4.2.4 Regional Variations

The terrain, resources and socio-economic conditions vary across different regions. Muzaffarabad Division, the largest division is less accessible and the most econically backward, especially the northern part of District Neelum valley. Agricultural activity increases from Muzaffarabad towards Bagh, then Poonch, Sudhnoti and Kotli. The area is more accessible, especially from Pakistan. Kotli is partially hilly, and Bhimber and Mirpur further south are plains and are similar to agricultural regions of northern Punjab. Settlement size is larger here and agricultural production is more.

4.2.5 Land use and agriculture

Area under cultivation is around 194,191hectares, which is almost 13% of the total Geographical area out of which 92% of the cultivable area is rain-fed. About 87% households have very small land holdings between one to two acres. Major crops are Maize, Wheat & Rice whereas minor crops are Grams, Pulses (red kidney beans), Vegetables and Oil-seeds. Major fruits produced in AJK are Apple, Pears, Apricot and Walnuts. Agriculture and livestock income ranges between 30-40% of household earnings. Details are in Table 4.8.

The remaining share comes from other sources including employment, businesses and remittances received by the families of AJK living abroad. Reduced agriculture productivity has adversely affected the traditional lifestyle and per capita income of the rural households.

4.2.6 Forests

About 42.6% of the total geographical area (0.567 million hectares), is controlled by the Forests Department. The per capita standing volume is 299.5 Cft and per capita forest area is 0.35 Acre. Annual wood demand is 1.65 million cubic meters and sustainable production is 1.94 million cubic meters. The local communities have traditional rights in terms of use of the forests and on an average three trees are burnt by one household every year for the fuel-wood requirements in the absence of alternate sources. Similarly, about 5 trees on average are required to construct a

house for which the wood roofs have to be replaced after every 8-10 years. Forest cover details are in Table 4.9.

4.2.7 Biological Resources and Protected Areas

AJK is endowed with rich biological resources. Its snow-covered peaks, forests, rivers, streams, valleys, velvet green plateaus and climate varying from arctic to tropical, join together to make it suitable to a large variety of flora and fauna. AJK has varied mountainous landscape ranging from low hills to high mountains (2000 to 6000 m). It has a varied wildlife which includes, Leopard (both snow and common) Himalayan Bear, Himalayan Ibex, Grey Goral, Musk Deer, Kashmir Stag, Nilgai, Monal Pheasant, Western Horned Tragopan, Snow Pheasant, Red-leg Partridge, Monal, Cheer, Koklas Pheasants, Red jungle fowl, Peacock and Dusk Markhore, Resus Monkey and Grey Langur. Recent surveys however suggest that the population of wildlife in AJK region is significantly declining due to the threats, such as, illegal hunting, illegal cutting of trees, overgrazing of pastures, commercial loggings, irrational harvesting of medical plants and encroachment in the forest land.

The government of AJK has notified the following protected areas within its jurisdiction:

- Machiara National Park, District Muzaffarabad
- Toli Pir National Park, District Poonch
- Pir Lasura National Park, Kotli
- Mori Said Ali Game Reserve, Bagh
- Phalla Game Reserve, Bagh
- Poonch River National Park, Kotli
- Ghamot National Park, Neelum
- NP Gurez National Park, Neelum
- Deva Vatala National Park, Bhimber
- Salkhala Game Reserve, Neelum
- Moji Game Reserve, Muzaffarabad
- Qazinag Game Reserve, Muzaffarabad
- Hillan Game Reserve, Bagh
- Nar Game Reserve, Bagh
- SudhanGali Game Reserve, Bagh
- Doom Kalla Game Reserve, Bagh
- Junjhal Hill Game Reserve, Sudhnutti
- Vatala Game Reserve, Bhimber.

4.2.8 Socioeconomic Profile

Following section provides some information about the socioeconomic profile of the province. Some vital socioeconomic statistics are reported in Table 4.10.

4.2.9 Population

According to the 1998 population census, the AJK had a population of 2.973 million, which estimated to have grown to 4.257 million in 2013. Almost 100% population is Muslim. The Rural to Urban ratio is 88:12. The population density is 320 persons per Sq Km.

The literacy rate has increased from 55% to 70% after 1998 census. Infant mortality rate is approximately 62 per 1000 live births, whereas the immunization rate for the children under 5 years of age is more than 94%.

4.2.10 Per Capita Income and Employment

The majority of the rural population depends on forestry, livestock, agriculture and non-formal employment to earn its livelihood. National average per capita income has been estimated to be USD 1,368. Unemployment ranges from 9.0 to 13%. In line with the National trends, indicators of social sector particularly health and population have not shown much proficiency. Efforts have been made during the recent past to make up this deficiency so that the fruits of development can be brought to the door steps of common men.

4.2.11 Health

Health coverage AJK is still inadequate. There are approximately 3,111 hospital beds available in the area averaging one bed per 1368 people. The total number of Doctors, including Administrative Doctors, Health Managers & Dentists is 887 out of which there are 762 Medical Officers/Specialists, 69 Dental Surgeons and 56 Health Managers giving an average of 0.208 per 1,000 population in respect of Doctors, 0.178 Per 1,000 Population in respect of Medical Officers/Specialists, 0.016 per 1,000 Population in respect of Dentists and 0.013 per 1000 pop., in respect of Health Managers, whereas only 30 hospital beds & 11 dispensaries were available in the area at the time of independence.

4.2.12 Education

Education has been a priority of the Govt. of AJK as about 30% of its total recurring budget, besides, 7% of the total development budget is allocated to this sector. As a result of this substantial investment, AJK's literacy rate is 70% which is significantly higher than the national average of Pakistan. At present the gross enrollment rate at primary level is 98% for boys and 90% for girls (between the ages of 5-9).

4.2.13 Gender Issues

Women's access and control over productive resources is limited. Vulnerability of women to discriminatory treatment varies across classes, regions, and the urban / rural populations. The women dependency rate is very high, and most can be classified as vulnerable. Another reason of dependency is low participation of women in economic activities. AJK is relatively behind the targets set-out in the Millennium Development Goals by 2015. The literacy rate and education of women in AJK is lower than their counterparts, particularly the higher education. The GoAJK is implementing a Gender Mainstreaming Project to build the capacity of government officials to mainstream gender in the (i) formulation, (ii) implementation, and (iii) monitoring and evaluation of government policies, plans, programs and projects in all areas of development. The SDMA has a gender and child cell to address gender issues during disaster management.

Table 4.1: Groundwater Quality of Rawalpindi District

	Parameter	Unit	WHO Limits	Results
1.	pH	--	7.0– 8.5	7.2
2.	Odor	--	Unobjectionable	Odorless
3.	Color	TCU	5–50	Clear
4.	Taste	--	Unobjectionable	Tasteless
5.	Turbidity	NTU	5-25	6.2
6.	TDS	mg/l	500–1500	334
7.	TSS	mg/l	--	8
8.	Calcium	mg/l	--	41
9.	Magnesium	mg/l	--	30
10.	Hardness($CaCO_3$)	mg/l		222
11.	Chloride	mg/l	75–200	41
12.	Sulphate	mg/l	50–150	61
13.	Nitrate	mg/l	500	0.6
14.	Fluoride	mg/l	1.5	0.25
15.	Arsenic	mg/l	0.01	0
16.	Lead	mg/l	10	5.5
17.	Total Coliform		0/100ml	--

(*Source: Subsoil Water Quality Monitoring Report of the EPA, Punjab*)

Table 4.2: Groundwater Quality of Sheikhupura District

	Parameter	Unit	WHO Limits	Results
1.	pH	--	7.0– 8.5	7.7
2.	Odor	--	Unobjectionable	Odorless
3.	Color	TCU	5–50	Clear
4.	Taste	--	Unobjectionable	Tasteless
5.	Turbidity	NTU	5-25	5
6.	TDS	mg/l	500–1500	935
7.	TSS	mg/l	--	9
8.	Calcium	mg/l	--	73
9.	Magnesium	mg/l	--	64
10.	Hardness($CaCO_3$)	mg/l		442
11.	Chloride	mg/l	75–200	172
12.	Sulphate	mg/l	50–250	183
13.	Nitrate	mg/l	500	20
14.	Fluoride	mg/l	1.5	0.4
15.	Arsenic	mg/l	0.01	0.003
16.	Lead	mg/l	10	7
17.	Total Coliform		0/100ml	--

(*Source: Subsoil Water Quality Monitoring Report of the EPA, Punjab*)

Table 4.3: Groundwater Quality of Bahawalpur District

	Parameter	Unit	WHO Limits	Results
1.	pH	--	7.0– 8.5	7.5
2.	Odor	--	Unobjectionable	Odorless
3.	Color	TCU	5–50	Clear
4.	Taste	--	Unobjectionable	Tasteless
5.	Turbidity	NTU	5-25	5
6.	TDS	mg/l	500–1500	935
7.	TSS	mg/l	--	9
8.	Calcium	mg/l	--	73
9.	Magnesium	mg/l	--	64
10.	Hardness($CaCO_3$)	mg/l		442.5
11.	Chloride	mg/l	75–200	173
12.	Sulphate	mg/l	50–150	183
13.	Nitrate	mg/l	500	21
14.	Fluoride	mg/l	1.5	0.4
15.	Arsenic	mg/l	0.01	0.01
16.	Lead	mg/l	10	7
17.	Total Coliform		0/100ml	--

(*Source: Subsoil Water Quality Monitoring Report of the EPA, Punjab*)

Table 4.4: Ambient Air Quality Data of Lahore (1998-2002)

Location	Ozone(ppb	SO_2 (ppb)	CO (ppm)	NO_2 (ppb)	NO_x(ppb)	PM_{10} (ug/m^3)	Noise (dB)	Humidity
Shadman Chowk (commercial area)	14	16	4		102	353	72-81	25
Shalimar Road(residenti	18	6	1	15	20	780	--	--
Upper Mall (Residential)	11	2	0.9	18.2	28	312	--	51
Chowk Yateem Khana (busy road intersection)	7	47	4	111	176	509	82	57
WHO Guideline Values(ug/m^3)	*120*	*125*		*200*				

CO Carbon Monoxide
NO_x Oxides of Nitrogen
ppb parts per billion
ppm parts per million PM_{10} particulatematterofsizelessthan10micrometer
dB decibel
NO_2 Nitrogen dioxide

(*Source: Ambient Air Quality Monitoring Data of the EPA, Punjab*)

Table 4.5: Number of Public Sector Healthcare Facilities and Bed Strength in Punjab

Facility	Number	Number of Beds
Hospitals	308	34,612
Dispensaries	1,333	1,333
Rural Health Centers(RHC)	295	5,900
Basic Health Units(BHU)	2,456	4,912
T.B. Clinics	41	72
Sub-Health Centers(SHC)	454	--
Maternity and Child Health Centers(MCHC)	492	--

(*Source: Punjab Development Statistics, 2007*)

Table 4.6: Health Indicator Status in Punjab

Health Indicator	Level per thousand
Child Mortality(under5years)	20
Infant Mortality Rate(IMR)(under2years)	115
Infant Mortality Rate(under1month)	64
Neonatal Mortality Rate(under1week)	73
Maternal Mortality Rate(MMR)	68
Crude Birth Rate(CBR)	40percent
Crude Death Rate(CDR)	12.5percent

(*Source: Punjab Sustainable Development Strategy, 2008*)

Table 4.7: Geographical Features of AJK

Area	5134 Sq.Miles13297 Sq. km. 1.330 Million Hectors 3.286 Million Acres
Longitude Latitude	73º—75º 33º— 36º
Topography	Mainly hilly and Mountainous with terraces Valleys and Plains at some places.
Climate Temperature	Sub-tropical highland type Maximum45.2°CMinimu m-02.6°C
Rainfall	1300 mm on the average
Elevation from sea • Range from South • Range from North	 360 meters 6325 meters
Snowline •In Winter around •In Summer around	 1200 meters 3300 meters
Main Rivers	Jhelum, Neelum & Poonch

Table 4.8: Agricultural Land use in AJK

Land Holdings Area in Hectares & Acres		
	Hectares	**Acres**
1. Total Farm Area	**638455**	**1577622**
Farm Area per Family	2.23	5.53
Farm Area Per Capita	0.33	0.82
2.AreaUnderCultivation	**194191**	**479845**
Cultivated Area Per Family	0.68	1.68
Cultivated Area Per Capita	0.1	0.25
3.AnnualCroppedArea	**238679**	**589775**
Non–irrigated Area	182091	449946
Irrigated Area	12102	29905
Area Under Maize Cultivation	100842	249181
Area Under wheat “	79088	195427
Area Under Rice “	2639	6521
Area Under Jawar “	13	33
Area Under Vegetables “	2979	7360
Area Under Fruits “	13092	32350

Sources:-Agriculture Department, Muzaffarabad.

Table 4.9: Forests in AJK

Total Geographical Area: **1.330 million Hectares**				
3.286 million Acres				
General Distribution of Land Utilization				
	Area(million)		**%of**	
Land Utilization	**Hectares**	**Acres**	**FDA***	**TGA****
A) Area Controlled By Dept. Of Forest	0.567	1.400	100.0	42.60
1. Area Under Productive Forests	0.379	0.936	66.8	28.5
i. Area under Actual Forest				
□ Area Under Deodar	0.018	0.044	3.1	1.3
□ Area Under Kael	0.036	0.090	6.4	2.7
□ Area Under Fir	0.042	0.103	7.4	3.2
□ Area Under Pine	0.057	0.141	10.1	4.3
□ Area Under Broadleaves Trees	0.001	0.002	0.1	0.1
Sub-Total (i)	**0.154**	**0.380**	**27.1**	**11.6**
ii. Area Under thinly wooded Forests	0.225	0.556	39.7	16.9
2)Non Productive Area	0.188	0.464	33.2	14.1
B Area Under Cultivation	0.173	0.427	-	13.0
C Area Under Cultivable Waste	0.032	0.080	-	2.4
D Area Under Uncultivable Waste	0.0558	1.379	-	42.0
Total Geographical Area (A+B+C+D)	**1.330**	**3.286**	**-**	**100**
Forest Production-				
Total Annual Forest Production			6687000 Cft	
Annual Production/Acre			4.77Cft	
Per Capita Forest Area			0.35Acre	
Per Capita Standing Volume			299.5 Cft	

Table 4.10: Key Statistics of AJK Population

Description	AJK	Pakistan
Area(Sq.km)	13,29	796,096
Cultivated land (%)	13	22.10
Villages	1771	48344
Population (projected in million)	4.257	184.35
Population Growth Rate (%)	2.41	2.03
Unemployment Rate per Annum (%)	13	5.9
Literacy (%)	70	58
Enrollment rate Primary Boys (%)	98	97
Enrollment rate Primary Girls (%)	90	85
Road density(km/sq. km)	0.63	0.33
Infant Mortality Rate (per 1000)	62	59
Population per hospital bed	1368	1786
Population predictor	4799	1127
MMR	201	260
Immunization Coverage (%)	94	53
Precipitate power availability (KWH)	348	368
Rural/Urban ratio	88:12	67:33
Pop. Density per sq. km.	320	232
Per capita income(per annum) US$	1368	1368

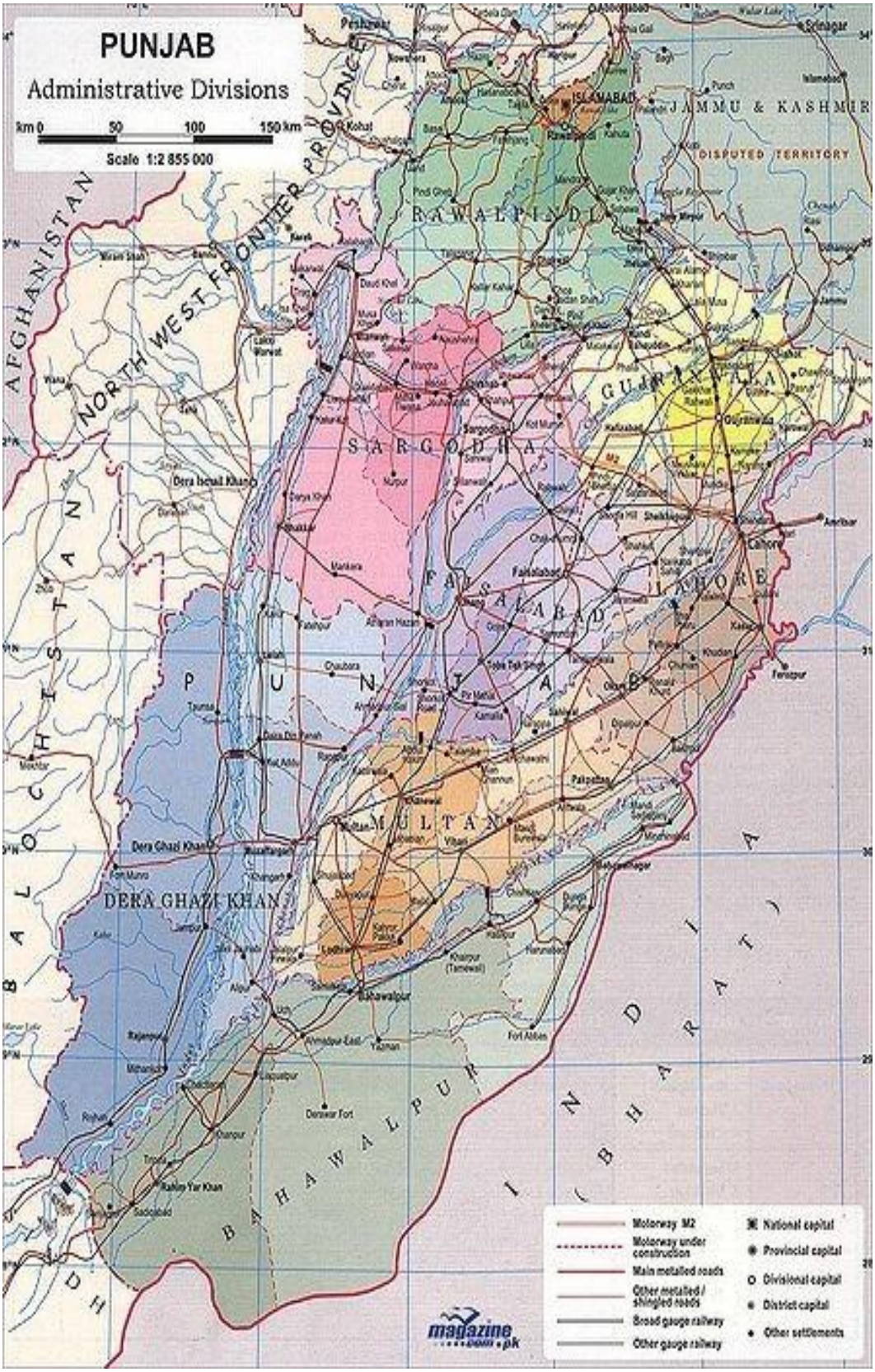


Figure 4.1: Map of Punjab Province

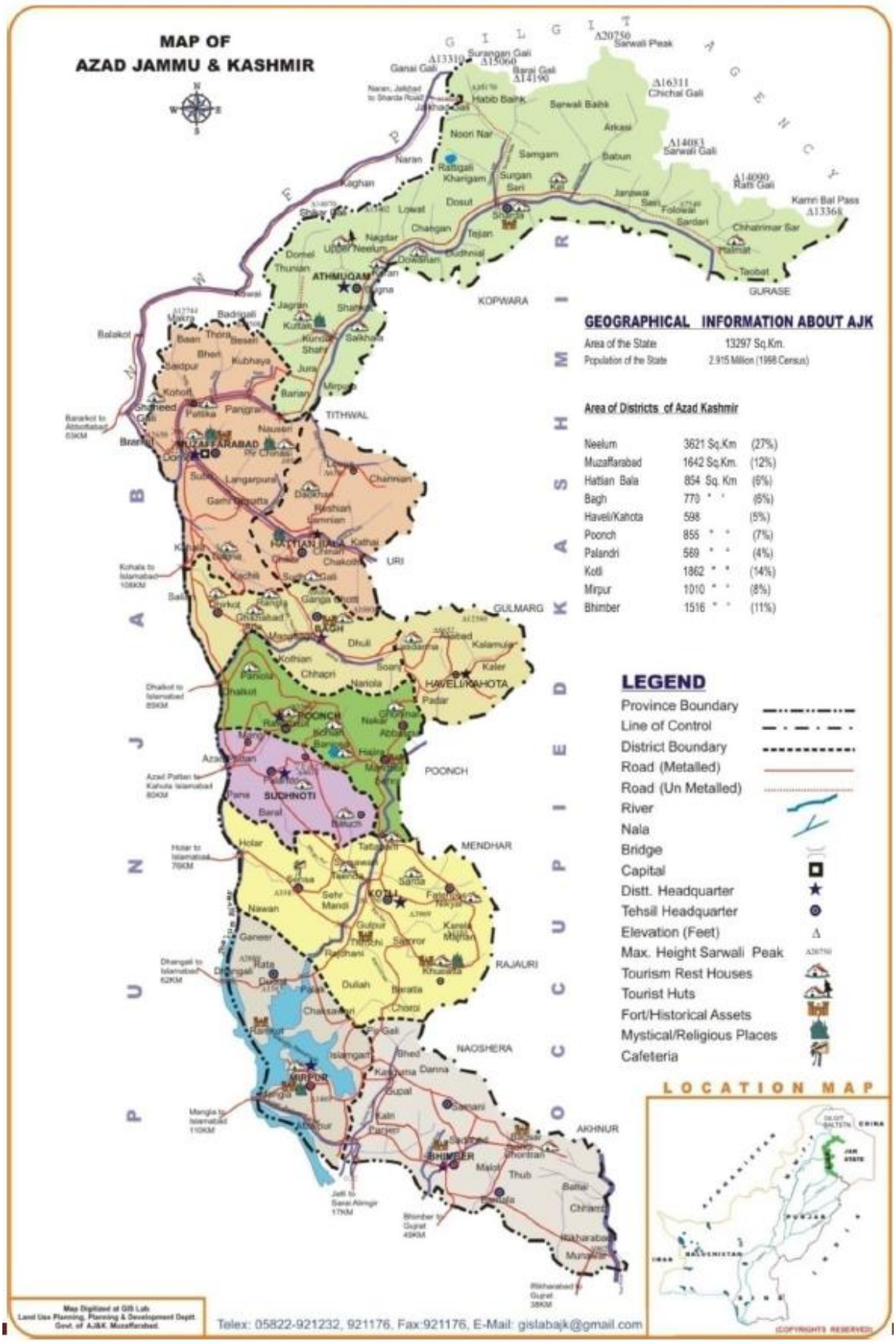


Figure 4.2: Map of AJK

5. Stakeholder Consultations

This Chapter provides the objectives, process and outcome of the stakeholder consultations conducted as part of the present study. The primary objective of consultations at this stage was to incorporate intensive considerations of the local institutional knowledge about the socioeconomic and environmental conditions in the project area and the potential positive and negative environmental and social impacts of the project into project design through the ESMF. The consultations included a meeting of key institutional stakeholders active in the project area and discipline. The subproject-specific consultations will be covered in the respective ESMPs.

5.1 Objectives

The stakeholder consultation is an integral part of the environmental and social assessment for a project such as this, and aims to provide a two-way communication channel between the stakeholders and the project proponents. In line with this aim, the objectives of the stakeholder consultation conducted as part of the present study were to:

- Develop and maintain communication links between the project proponents and stakeholders
- Provide key project information to the stakeholders, and to solicit their views on the project and its potential or perceived impacts
- Collect and document local institutional knowledge about the socioeconomic and environmental conditions in the project area, how these relate to the project activities and how project activities can be designed to maximize social and environmental benefits and minimize potentially negative impacts
- Ensure that views and concerns of the stakeholders are incorporated into the project design and implementation with the objectives of reducing or offsetting negative impacts and enhancing benefits of the proposed project.

5.2 Stakeholder Analysis

Stakeholder analysis was carried out to identify relevant stakeholders on the basis of their ability to influence the project or their vulnerability to be negatively impacted from it. This approach ensured that no relevant groups are excluded from the consultation, and appropriate engagement strategies are developed for each stakeholder.Stakeholders were consulted at various levels of instituituons both in Punjab and AJK, and also potentially affected persons and intended beneficiary communities. The institutional stakeholders include officials from the P&D, Environment Protection Departments, Implementing Agencies, academia, communities, NGOs, field staff of PID and line agencies of AJK.

The Stakeholders Consultations conducted during the study are as follows

Punjab			
Date	**Place**	**No of Participants**	**Nature of Stakeholders**
April 8, 2015	Pindi Bhatian Project sites	(45 persons) 5 29 4 7	4 village level meetings held 1. Pindi bhattian by Pass 2. Village Talley Goraya 3. Village Tally Goraya Khurd 4. Women Group at Bhatianwala

April 14, 2014	PC Lahore	101	PID Punjab- head quarter and field staff, Planning & development Department, PDMA, Metrological Department, PIDA, EPA, teachers and students of Environment departments of local Universities, representatives of Flood Affected Communities from Pindi Bhattian, Shorkot, Bahawalpur and D.G.khan districts and World Bank and WWF.
Azad Jammu & Kashmir			
April 9, 2015	Muzaffarabad	9-12am 2-4 pm 4.30-5.15	Consultations with EPA and Land Use Planning departments Eagle Social Welfare Society Muzagarabad, meeting held im Gulshan colony with 12 localparticipants and EPA, Forest department and Muzafarabad Development Authority. Gulshan Colony hit by floods by three Nullahs –Khushgar –Tariqabad Nullah, Makri Nullah Meetig with ILM Women Committee – the families hit by flood from Khushgar nullah
April 10, 2015	Muzaffarabad	9.00-12-30	Satkeholders Consultation Meeting with all Line departments
April 11, 2015	Mirpur District Murpur District Bhimber District	9- 11 am 12-1.30 2.30-3.30 pm	Stakeholders Consultations with Irrigation, Agriculture and Social Welfare Departments Project orientation and Impact assessment with Village Communities at Khari Sharif Project orientation and Impact assessment with Village Communities at ganda Sarwani Project orientation and Impact assessment with Village Communities at Panjeri Wala

The consultations with the project stakeholders were carried out while conducting the study. A participatory and consultative approach was employed for information gathering and data collection. The summary of key recommendations are given below:

- The project targets most vulnerable communities in Muzaffarabad, Bagh, Meelam, Mirpur and Bhimber districts in AJK and almost all district adjoining river Chenab and riavi and particularly of southern Punjab.
- Common grazing land available in the waterways. The proposed flood embankments should be constructed at the edge of the common lands and private land . that will held demarkation of common lands and reduce the chances of encrochments.

- The community needs assessment, consultation and participation should be the integral part of the project.
- Sufficient government and common community lands are available in the nullahs and river banks for construction of flood embankments, however if some small parts of private land required for extensions the local communities are willing as thestrengthened embankments will save major part of their livelifoods.
- The private land holders along the flood embankments should be encouraged to grow forests that will help sustainability of the flood embankments . The project should built in some incentives for those growing forests.
- Local knowledge on river flow / flash floods should be used in design and implementation of sub-projects. For examle, the local community in Panjeri-District Bhimber knew that in Colt River (Bhinder Nullah) the first flood always comes during first week of June. The flood head is between 70,000 to 80,000 cusic and the ROW of Colt River is 250 feet.
- Concentration should be on positive impacts of the sub-projects, but low to moderate level impacts should be mitigated efficiently.
- Compensations, if any, should be paid on agreed time
- The contractors should use Local community skills- tractors, labour and other technical skills on preferencial terms.
- Enough notice should be given to vacate encroached spaces.
- Vulnerable people –women headed households,
- The project needs to have such mechanisms, in particular, a grievance redressal mechanism that would address complaints of affected and beneficiary communities.
- Access to information should be ensured in project implementation mechanisms.
- Academia should be involved in research studies related to the project.

5.3 Participation Framework

The stakeholder consultation is a continuous process, and should be carried out throughout the life of project. The consultations carried out during the present study and reported in this Chapter are essentially among the initial steps in this process. During the subsequent project phases as well, participation of the project stakeholders needs to be ensured.

A framework has been developed for the project to ensure dissemination of information, access to information, particpation and consultations with stakeholders during the project implementatin and in all stages of sub-projects such as indentification, desining, implementation and monitoring. It also enlisted stakeholders, provides guidance on the use of appropriate tools with clarification of roles and responsibilities.

6. Impact Assessment and Mitigation

This chapter identifies the significant potential environmental, socio-economic, health and safety impacts which may occur during the project life. The appropriate mitigation measures are also discussed in this and the subsequent chapters of this report. A brief qualitative description of each aspect and the affected environment is presented in the following sections.
The term "Environment Impact" or simple "Impact" covers the negative, adverse or harmful, as well as positive, desirable or beneficial impacts of the project on environmental settings. Prediction of impacts of the proposed activity is based on factual data; however the significance of the impacts involves a value judgment technique.

The nature of the impacts may be categorized in terms of:

Nature	-	Positive or Negative
Duration	-	Long or Short term
Effect	-	Direct or Indirect
Extent	-	Wide or Local

Impact significance depends on both the nature of the impact and on the sensitivity of the receptor. The more sensitive the receptor, the greater will be the significance of impact of that change. For this report, nature of change is combined with the sensitivity of the receptor to evaluate the significance of the impact. The significance of impact is characterized as very low, low, moderate, high and very high. Environmental issues of moderate, high and very high significance would be provided with mitigation measures.

6.1 Project Physical Components

The components of the project responsible for environmental and social impacts and therefore relevant for our analysis are the physical works. The summary list of potential physical activities is provided below.

- Restoration of flood embankments to resilient standards
- Rehabilitation of other infrastructure such as spurs and river channelization works
- Installation of meteorological instruments

In addition, the ESMF also covers the feasibility and other studies to be conducted under the project.

6.2 Assessment of Potential Impacts and Generic Mitigation

The potentially negative impacts are assessed in the subsections below. The generic mitigation measures have also been provided here; additional measures may be added as a result of the subproject-specific environmental assessments to be carried out during the Project implementation (subproject-specific environmental assessments are further discussed in the next Chapter). The interactions are characterized in **Table 6.1**. As can be seen from the table, most of the potentially negative impacts of the project activities are moderate, localized, short term, and reversible in nature. These interactions are further

discussed in the subsequent sections. The types of social impacts and their mitigation measures are given in RPF.

Table 6.1: Project-Environment Interactions

Environmental Component	Impact Characteristics																
	Direction			Duration		Location		Frequency		Extent		Significance			Reversibility	
	Positive	No Impact	Negative	Long	Short	Direct	Indirect	Continuous	Intermittent	Wide	Local	Large	Moderate	Small	Rev.	Irrev.
a. Restoration of flood protection works and other infrastructure such as spurs and river channelization works – Design and Planning Phase																
Reduced destruction of floods ✓		✓														
Regulated supply of irrigation water from the reservoir, and hence increased cultivation in the Command area		✓														
Surface Water Quality		✓														
Groundwater Quality		✓														
Air Quality																
Hydrology and Drainage		✓														
Soil Quality/Erosion																
Noise		✓														
Flora		✓														
Fauna		✓														
Disturbance to Public life		✓														
Solid waste		✓														
Land Acquisition		✓														

Environmental Component	Impact Characteristics																
	Direction			Duration		Location		Frequency		Extent		Significance			Reversibility	
	Positive	No Impact	Negative	Long	Short	Direct	Indirect	Continuous	Intermittent	Wide	Local	Large	Moderate	Small	Rev.	Irrev.
Traffic Situation		✓														
Occupational Health &Safety		✓														
Lifestyle and culture		✓														
Construction Phase																
Surface Water Quality			✓		✓	✓			✓		✓			✓	✓	
Ground water Quality		✓														
Air Quality			✓		✓	✓			✓		✓			✓	✓	
Hydrology and Drainage			✓		✓	✓			✓		✓			✓	✓	
Soil Quality/Erosion			✓		✓	✓			✓		✓			✓	✓	
Noise			✓		✓	✓			✓		✓			✓	✓	
Flora			✓		✓	✓			✓		✓			✓	✓	
Fauna			✓		✓	✓			✓		✓			✓	✓	
Disturbance to Public life			✓		✓	✓			✓		✓			✓	✓	
Solid waste			✓		✓	✓			✓		✓			✓	✓	
Land Acquisition		✓													✓	
Traffic Situation			✓		✓	✓			✓		✓			✓	✓	
Occupational Health &Safety			✓		✓	✓			✓		✓			✓	✓	
Lifestyle and culture			✓		✓	✓			✓		✓			✓	✓	

Environmental Component	Impact Characteristics																
	Direction			Duration		Location		Frequency		Extent		Significance			Reversibility	
	Positive	No Impact	Negative	Long	Short	Direct	Indirect	Continuous	Intermittent	Wide	Local	Large	Moderate	Small	Rev.	Irrev.
Operation & Maintenance Phase																
Surface Water Quality			✓		✓	✓			✓		✓		✓		✓	
Groundwater Quality		✓														
Air Quality		✓														
Hydrology and Drainage			✓		✓	✓			✓		✓		✓		✓	
Soil Quality / Erosion			✓	✓		✓		✓			✓		✓		✓	
Noise		✓														
Flora		✓														
Fauna		✓														
Disturbance to Public life			✓		✓	✓		✓			✓		✓		✓	
Solid waste				✓		✓		✓		✓			✓		✓	
Land Acquisition		✓														
Traffic Situation		✓														
Occupational Health &Safety		✓														
Lifestyle and culture			✓	✓		✓		✓		✓			✓		✓	

Environmental Component	Impact Characteristics																
	Direction			Duration		Location		Frequency		Extent		Significance			Reversibility	
	Positive	No Impact	Negative	Long	Short	Direct	Indirect	Continuous	Intermittent	Wide	Local	Large	Moderate	Small	Rev.	Irrev.
Installation of meteorological instruments: **Design &Planning**																
Surface Water Quality		✓														
Ground water Quality		✓														
Air Quality																
Hydrology and Drainage		✓														
Soil Quality/Erosion																
Noise		✓														
Flora		✓														
Fauna		✓														
Disturbance to Public life		✓														
Solid waste		✓														
Land Acquisition		✓														
Traffic Situation		✓														
Occupational Health &Safety		✓														
Installation of meteorological instruments: **Construction**																
Surface Water Quality		✓														
Ground water Quality		✓														
Air Quality																

Environmental Component	Impact Characteristics																
	Direction			Duration		Location		Frequency		Extent		Significance			Reversibility	
	Positive	No Impact	Negative	Long	Short	Direct	Indirect	Continuous	Intermittent	Wide	Local	Large	Moderate	Small	Rev.	Irrev.
Hydrology and Drainage		✓														
Soil Quality/ Erosion																
Noise		✓														
Flora		✓														
Fauna		✓														
Disturbance to Public life		✓														
Solid waste		✓														
Land Acquisition			✓	✓		✓		✓			✓			✓	✓	
Traffic Situation		✓														
Occupational Health &Safety			✓		✓	✓		✓			✓			✓	✓	
Installation of meteorological instruments: **Operation**																
Surface Water Quality		✓														
Ground water Quality		✓														
Air Quality																
Hydrology and Drainage		✓														
Soil Quality /Erosion																
Noise		✓														
Flora		✓														
Fauna		✓														

Environmental Component	Impact Characteristics																
	Direction			Duration		Location		Frequency		Extent		Significance			Reversibility	
	Positive	No Impact	Negative	Long	Short	Direct	Indirect	Continuous	Intermittent	Wide	Local	Large	Moderate	Small	Rev.	Irrev.
Disturbance to Public life		✓														
Solid waste		✓														
Land Acquisition			✓	✓		✓		✓			✓			✓	✓	
Traffic Situation		✓														
Occupational Health &Safety			✓		✓	✓		✓			✓			✓	✓	

6.2.1 Potential Impacts and Mitigations at Construction Phase

The construction phase of the project might result in a number of environmental aspects that are identified in this section. Activities that have been perceived as potential sources of these environmental concern are also disclosed. These environmental aspects may create temporary hazards of moderate significance to the environmental resources of the project area during the project construction phase. However, if managed properly these activities not pose any threat to the environment.

Air Quality

During construction period, the impacts on air quality are mainly due to material movement and the actual construction activities. Due to loading/ unloading and stocking of construction material, the air quality over the immediate influence area will be affected and the PM levels in ambient air might increase, though not in significant levels. The emissions from diesel generator sets, construction equipment and vehicles may deteriorate the air quality in the area.

The atmospheric pollution and pollution causing activities during the construction phase are as follows:

- Transportation of construction and excavated material to and from the site in diesel fueled trucks would cause the production of combustion gases (CO, CO2, NOx, SOx). Considering the scale of construction, the scarce population, and the relatively clean environment, moderate impact is expected from this activity. However, the emissions would be of temporary nature.
- Considerable amount of dust would be generated from slope cutting activity and also from other activities such as site clearance, excavation and transportation of excavated and construction material and concrete batching, but its effect would be f localized and temporary nature. The possibility of excessive dust generation may be reduced by adopting the best construction practices, precaution such as periodic watering, covering of construction material and usage of low emissions equipment during construction. Therefore the impact is rated as temporary and low.
- The concrete mixer used during concreting also causes above mentioned emissions. Due to moderate scale of construction and frequency of the operation, the impact of emissions is also assessed to be temporary and moderate.

Mitigation / Enhancement Measures

- In order to reduce the airborne dust emissions in the construction area due to material transport and construction activities, provisions will be made for sprinkling of water in the area where earth filling and excavation is being carried out. It will be ensured that the construction debris is removed daily
- During windy conditions stockpiles of fine material will be wetted or covered with plastic.

- PPEs such as dust masks will be made available to the construction workers at the site to avoid potential health hazards.
- Idlingofdeliverytrucksorotherequipmentwillnotbepermitteddduringperiodsof unloading or when they are not in active use.
- In no case, loose earth will be allowed to pile up along the approach roads.
- Allvehiclesandotherequipmentusedduringconstructionwillbeproperlyandregularlytuned and maintained.
- All permanently deployed vehicles exhausts will be monitored against NEQS.

Water Quality

Surface Water: The construction of the proposed project may have impacts on the surface water quality of the area. The impact may be in the form of increased turbidity of water streams, and also from potential discharge of anthropogenic or construction waste in to the streams. The activity that may cause impact on surface water is mainly washing of construction equipment and machinery. The will not only put additional burden on already scarce water resources, but will also result in discharge of wastewater. In the absence of the sewage drainage system, this wastewater can ultimately find its way in to the same water resource.

Ground Water: Ground water pollution can take place if chemical substances and oily waste get leached by precipitation of water and percolate to the ground water-table.

Mitigation / Enhancement Measures

The construction activities will be scheduled during non-monsoon season.

- Surplus earth will be transported from the construction site and no other disposal will be allowed.
- Spillage of fuel/oils and other construction materials shall be contained with best handling/construction practices and strict skilled supervision.
- Appropriate sanitation and water supply facilities will be provided in the labor camps.

Soil Stability and Erosion

Significant excavation and slope cutting is not expected for the project to negotiate level differences. Some works may alter the topography and may also lead to soil erosion.

Mitigation / Enhancement Measures:

- Construction work will not be carried out during monsoon.
- It will be ensured that no soil is left unconsolidated after completion of work.
- Photographic record will be maintained for pre-project, during-construction and post-construction condition of the sites.

The environmental monitoring during the project execution will ensure compliance to the above mitigation measures and their adequacy, as well as significance of the residual impacts.

Soil Contamination

Soil may be contaminated as a result of fuel/oils/chemicals spillage and leakage, and inappropriate disposal. The waste would be generated from site clearance, excavation, concrete-batching, concrete conveyance and construction of substructures and superstructures. The generated solid waste would be in the form of:

- Excavated soil,
- Residual from construction material (construction debris etc.)
- Residual from equipment cleaning (oily rags, used oil, worn out spare parts etc.).
- Domestic solid waste from labor camp

Appropriate construction practices and management actions as mitigation measures will greatly minimize the soil contamination potential. The significance of the residual impacts is therefore expected to be 'low'.

Mitigation / Enhancement Measures:

- The surplus soil from the excavation activity may be reused within the site or recycled to other intervention sites.
- Clearance waste and construction debris should be sent to designated land fill site while waste from equipment cleaning and maintenance should be segregated and stored in color-coded containers, these can be resold or reprocessed. No accumulation of solid waste at site shall be allowed.

Ambient Noise:

The major sources of noise pollution during construction activities would be vehicles and generators. During construction phase, the increase in traffic may also lead to increase in noise levels. As mentioned, the increase in noise level during construction activities would be of temporary nature and would fade away with the completion of the project.

Mitigation / Enhancement Measures:

Enhanced noise levels could be prevented and mitigated by careful planning of machinery operations, use of low noise equipment and scheduling of operations only during the day time in order to reduce these levels. Though the impact of noise may be of temporary nature and low significance, the following measures shall be considered and implemented.

- High noise emitting equipment if any will be fitted with noise reduction devices such as mufflers and silencers wherever possible.
- For protection of construction workers, ear plugs will be provided to those working very close to the noise generating machinery.

- High noise emitting equipment if any will be used during regular working hours so as to reduce the potential of creating a noise nuisance during the night.
- Regular inspection and maintenance of the construction vehicles and equipment will be carried out.

Impact on Flora

The risk and significance of the impact on flora from project construction activity is considered low. Plantation around the project interventions will improve the ecology and aesthetics of the surroundings.

Mitigation / Enhancement Measures:

- Compensatory plantation will be carried out with a ratio of five trees for each felled.
- Plant species suitable for the area will be planted at the onset of monsoon season. The plants will be provided with adequate protection from animals and proper monitoring will be carried out to ensure their growth.

Impact on Fauna

The construction activity may result in disturbance to, and small scale loss of wildlife habitats. However, the impact is likely to be small and wild life will be able to adjust its niche using its intrinsic phenotypic plasticity.

Mitigation / Enhancement Measures

No engineered mitigations are needed for protection of fauna during construction stage. At the administrative level, the construction contractor will be responsible to provide necessary awareness to its workers as to how to handle any "chance encounter" with fauna and wild life during construction. Under no circumstances, hunting or preying of animals will be allowed to the contractors' workers in and around the project area.

Land Acquisition

Land acquisition is not expected in the project, however as the location and details of activities are not known, reconstruction of various civil works might require land acquisition. In most of proposed interventions, land requirement is minimal and should be fulfilled through Government lands. No private land acquisition requirement is envisaged at this stage. Both the IAs committed that in case small pieces of private land is required for any subproject, they will acquire these pieces of land as Voluntary Land donation either from the community lands or from individual titleholders, and will strictly follow the entitlement matrix and guidelines as specified in Annex-G.

Mitigation / Enhancement Measures:

A Resettlement Policy Framework for the project has been developed and shall be strictly followed to ensure there is no involuntary land acquisition or loss of livelihood.

Health and Safety

Various activities during the construction phase of the project could have health and safety impacts on workers and the people living in the nearby vicinity.

Mitigation / Enhancement Measures

During the construction phase, careful planning and precautionary measures, will include the following:

- Provisions of proper signboards and informing the local people about the activity will be important. In addition, personal protection equipment such as helmets, gloves, dust-masks, boots and earmuffs, will be provided for the workers.
- Adequate water-supply and sanitation facilities will be provided to any labor.
- Caution signboards for the road users and surrounding people will be provided to avoid any accidents at the work site.
- In case of traffic diversions, proper sign boards will be provided sufficiently ahead of the worksite.
- Proper protective equipment shall be provided to workers
- The WB EHS Guidelines will be followed.

6.2.2 Environmental and Social Mitigation Plan

The generic Mitigation Plan prepared on the basis of the impact assessment discussed above is presented in **Table 6.2**. The subproject-specific mitigation plans will be included in the respective safeguard instruments (ESMP, or Checklist) to be prepared for each subproject. The generic plan in **Table 6.2** will be used as a reference and guidance while preparing the subproject-specific ESMPs or Checklists.

Table 6.2: Generic Environmental and Social Mitigation Plan

Activity	Potential Impacts	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Party(ies) Responsibl
Construction contractor mobilization and establishment of campsite and machinery/equipment Yard	Changes in land use pattern Influx of external workforce Social conflicts	• Site for camp site shall be selected keeping in view the cultural norms of the area to avoid undue interference of the Construction contractor's staff with the local residents. • Local residents shall be given priority in the employment opportunities generated during construction and operations phase • The land shall be rented for the campsite and equipment yard. No resettlement is envisaged for this purpose.	• Monthly rent receipts. Development &implementation of policy on local employments • Employment record	• Strict compliance monitoring on fortnightly basis • Quarterly Reporting	Execution by construction contractor Monitoring by Environmental and social specialist
	• Vehicles may spread oils &chemicals	• Proper disposal of used oil and chemical waste in accordance with MSDSs hall be ensured. • Efficient Use of Chemicals shall be ensured. • Good housekeeping practices shall be ensured at workshop areas. • Mixing of waste into fresh water sources shall not be allowed.	• Visual inspection	• Daily Monitoring report • Quarterly Reporting	Execution by construction contractor Monitoring by Environmental and social specialist

Activity	Potential Impacts	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Party(ies) Responsibl
	• Deterioration of air quality due to machinery &equipment	• Proper engine tuning of machinery/equipment to meet National Environmental Quality Standards of Pakistan limits. • Water should be sprinkled where needed and appropriate, particularly at worksites near the communities.	• Monitoring shall be done on stack of machinery and equipment. The parameters required to be monitored are Smoke, H2S, SOx, CO, VOCs and NOx. • Evidence of measurement records.	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental and social specialist
	• Noise	• Equipment with high levels shall be fitted with noise reduction devices • Regular inspection, maintenance and lubrication of the construction vehicle and equipment shall be performed • Use of PPEs such as ear plugs and ear muffs by the workers shall be ensured • Avoid night time activity	• Monitoring compliance to NEQS for noise(SRO72(KE)/2009) • The sampling shall be done twice on monthly basis at 7m from the source. The duration of sampling shall be 24 hours @ 15 seconds interval over 15 minutes every hour (averaged)	• Fortnightly monitoring reports • Quarterly Reporting	Execution by construction contractor Monitoring by Environmental and social specialist

Activity	Potential Impacts	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Party(ies) Responsibl
	• Land degradation due to solid waste disposal of campsite	• Ensure proper disposal of camp site waste at designated landfill/disposal sites. If the project area does not have any disposal site the construction contractor shall use any depression for waste dumping. Prior to dumping the contractor should get the NOC from local authorities for disposal of solid waste. An impervious liner shall be laid to waste sites before the dumping of solid waste. The impervious liner shall be approved by the environmental and social specialist. After the dumping of solid waste the depression should be covered by scarified material.	• Visual inspection	• Weekly monitoring reports • Quarterly Reporting	Execution by construction contractor Monitoring by Environmental and social specialist
		• Good housekeeping practices within the camp site shall be adopted to minimize waste generation. • Disposal of campsite waste near residential colonies or in agricultural fields shall not be allowed			

Activity	Potential Impacts	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Party(ies) Responsibl
	• Water contamination	• Waste management plan to be prepared for appropriate disposal of sewage –such as septic tank and soaking pits	• Monitoringcompli ancetoNEQSofsani tarywastewaterge neratedfromcamp site.Themonitoring parameterswillbeT SS, BOD, COD and Oil &Grease. • Waste management plan in place • Photographic record	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental and social specialist
	• Loss of vegetation	• The construction crew shall be provided with LPG as cooking (and heating, if required) fuel. Use of fuel wood shall not be allowed.	• Use of LPG cylinders at campsite	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental and social specialist
	• Health and Safety issues	• Protective fencing to be installed around the Camp to avoid any accidents • Firefighting equipment shall be made available at the camps	• Use of personal protective equipment at campsite	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental

Activity	Potential Impacts	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Party(ies) Responsibl
Transportation of construction material	• Soil erosion and contamination	• Vehicular traffic on unpaved roads shall be avoided as far as possible. • Vehicles and equipment shall not be repaired in the field. If unavoidable, impervious sheathing shall be used to avoid soil and water contamination.	• Log of vehicle and equipment repairs	• Fortnightly monitoring reports • Quarterly reporting	• Monitoring by Environmental and social specialist
	• Air pollution	• Vehicular traffic on unpaved roads shall be avoided as far as possible. Operation of vehicles and machinery close to the water channels, water reservoir shall be minimized. • Vehicles shall be kept in good working condition and properly tuned, in order to minimize the exhaust emissions	• Route maps of vehicle movement • Log of vehicle maintenance	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental and social specialist
	• Noise pollution	• Vehicles shall have exhaust mufflers (silencers) to minimize noise generation • Night time traffic shall be avoided near the communities.	• Log of vehicle movement time • Visual inspections of the vehicles	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental and social specialist

Activity	Potential Impacts	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Party(ies) Responsibl
	• Health and Safety issues	• Road signage shall be fixed at appropriate locations to reduce safety hazard associated with project-related vehicular traffic • Project drivers shall be trained on defensive driving • Vehicle speeds near/within the communities shall be kept low, to avoid safety hazard and dust emissions.	• Visual inspections • Training record	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental and social specialist
	• Damage to infrastructure	• All damaged infrastructure shall be restored to original or better condition.	• Visual inspections • Photographic records • Infrastructure restoration records	• Fortnightly monitoring reports • Quarterly reporting	• Execution by constructio n contractor • Monitoring by
Construction works	• Soil erosion and contamination	• Material borrowing and disposal plan should be prepared • Cultivation fields should be avoided for borrowing material to the extent possible • Written consent of the land owner should be obtained for material (soil) borrowing • Photographic record (before, during, after) should be kept for the disposal areas.	• Evidence of plan in place. • Photographic record	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental and social specialist

Activity	Potential Impacts	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Party(ies) Responsibl
	• Loss of natural vegetation	• Compensatory tree plantation (five times the trees cut down for construction) should be carried out at appropriate locations within the project area	• Evidence of plantation. • Photographic record	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental and social specialist
	• Site overburden	• Wind direction shall be considered while selecting sites for stockpiles. • Stockpiles of overburden shall be kept covered where possible. • Ensure proper disposal of construction waste at designated landfill/disposal sites. If the project area does not have any disposal site the construction contractor shall use any depression for waste dumping. Prior to dumping the contractor should get the NOC from local authorities for disposal of solid waste.	• Visual inspections • Monitoring Particulate Matter	• Daily Monitoring reports • Fortnightly monitoring reports of PM_{10} • Quarterly Reporting	Execution by construction contractor Monitoring by Environmental and social specialist
	• Damage to infrastructure	• All damaged infrastructure shall be restored to original or better condition.	• Visual inspections • Photographic records • Infrastructure restoration records	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental and social specialist

Activity	Potential Impacts	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Party(ies) Responsibl
	• Sites of Historical, Cultural, Archeological or Religious Significance	• Proponent shall ensure that the construction contractor staff is educated about the location and importance of the cultural sites that exist in the Project area. The contractor shall ensure that these sites are not affected by the construction related activities including movement of the project vehicles and obtaining material for construction. These aspects will be included in the trainings to be conducted for the contractor's staff. • In case of chance find of any sites or artifacts of historical, cultural, archeological or religious significance, contractor shall ensure that the work is stopped at that site, the provincial and federal archeological departments are notified immediately, and their advice is sought before resumption Of the construction activities at such sites.[12] • Graveyards shall not be disturbed during the construction activities including movement of the project vehicles and obtaining borrow material for construction.	• Evidence of training provided to contractor staff. • Evidence of maps in place with these sites shown. • Record of appropriate action taken in case of chance find. • Photographic record of chance find	• Immediately after chance find, to be reported in next quarter.	Execution by construction contractor Monitoring by Environmental and social specialist
	• Noise pollution	• Equipment with high levels shall be fitted with noise reduction devices • Regular inspection, maintenance	• Monitoring compliance to NEQS for noise	• Fortnightly monitoring reports	Execution by construction contractor

Activity	Potential Impacts	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Party(ies) Responsibl
		and lubrication of the construction vehicle and equipment shall be performed • Use of PPEs such as earplugs and earmuffs by the workers shall be ensured • Avoid night time activity	(SRO72(KE)/2009) • The sampling shall be done twice on monthly basis at 7 m from the source. The duration of sampling shall be 24hours @ 15 seconds interval over 15 minutes every hour(averaged)	• Quarterly reporting	Monitoring by Environmental and social specialist
	• Air pollution	• Proper engine tuning of machinery/equipment to meet National Environmental Quality Standards of Pakistan limits. • Water should be sprinkled where needed and appropriate, particularly at worksites near the communities.	• Monitoring shall be done on stack of machinery and equipment. The parameters required to be monitored are Smoke, H_2S, SOx, CO, VOCs and NOx. • Evidence of measurement records.	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental and social specialist

Activity	Potential Impacts	Mitigation Measures	Monitoring Indicators	Monitoring and Reporting Frequency	Party(ies) Responsibl
	• Blocked access due to earthworks and stockpiling of excavated material	• A bypass route should be constructed at the project site to divert the traffic, thus avoiding the public traffic passing through the site.	• Traffic diversion plan	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental and social specialist
	• Impact on vulnerable groups	• Avoid loss of common property resources through proper identification of vulnerable groups as part of subproject screening • Ensure participation of vulnerable groups in project activities through consultations, to ensure planned investments take the well-being of such groups into consideration	• Compliance with social screening requirements of subprojects	• Fortnightly monitoring reports • Quarterly reporting	Environmental and social specialists of IAs
	• Impact on gender	• Ensure facilities in construction camps • Ensure gender access to water for household and other usage remains undisturbed through provision of alternate water points, as required.	• Facilities available for women at work camps • Number of alternate water points available	• Fortnightly monitoring reports • Quarterly reporting	Execution by construction contractor Monitoring by Environmental and social specialist

7. Environmental and Social Management Framework

This Chapter presents the Environmental and Social Management Framework (ESMF) for the proposed project.

7.1 Project Activities Screening

All activities proposed for the project shall undergo initial screening through a number of filters that include screening environmental and social impacts. Generally, subprojects with any significant, long-term or medium term, irreversible environmental and social negative impacts will avoided to the extent possible.

7.2 Screening for Environmental and Social Impacts

The ESMF categorizes subprojects on the basis of their costs, nature of activities, and potential impacts on environment and or people. The ESMF specifies a different type and extent of environmental and social assessment that will need to be carried out before initiating each category of subprojects. In general the criteria mentioned in **Table 7.1**shall be followed to determine the category of subprojects and level of screening/assessment required for environmental impacts.

Table 7.1: Criteria for Selecting Screening Methodology for Environmental and Social Impacts

Type of Subproject	Large Subprojects Full EIA Required (will not be funded under the DCRIP project)	Medium-sized Subprojects ESMP Required	Smaller Subprojects Environmental Screening Required (with the help of Environmental and Social Checklist)
Flood protection infrastructure	Subprojects requiring new construction OR requiring land acquisition, OR structure height more than 10 m or above OR requiring an EIA according to PEPA regulations and SIA and preparation of RAP as per World OP 4.12 of World Bank OR having significant irreversible and widespread impacts OR involving significant degradation of forestry of sensitive	Subprojects involving rehabilitation of existing structures; potentially causing low to moderate level of negative but reversible and localized impacts	All other subprojects

Type of Subproject	Large Subprojects Full EIA Required (will not be funded under the DCRIP project)	Medium-sized Subprojects ESMP Required	Smaller Subprojects Environmental Screening Required (with the help of Environmental and Social Checklist)
	natural habitat.		
Meteorological Instrument Installation	Requires land acquisition OR has significant irreversible impacts.	Involves partial loss of encroached land for agriculture or storage purpose,	All other projects

All selected subprojects will be screened for environmental and social impacts using the environmental and social screening checklist provided in **Annex B**. If the screening process concludes that the subproject is likely to have significant and or irreversible negative environmental and or social impacts (see second column of **Table 7.1**), a full EIA will be needed for such sub-projects. However such subprojects will not be financed through the governments' own resources and will not be included under DCRIP. If the screening process concludes that the subproject is likely to have low to moderate level of negative environmental and or social impacts (see third column of the **Table 7.1**), an Environmental and Social Management Plan (ESMP) and a Resettlement Action Plan (RAP) shall be prepared prior to initiating subproject. An Indicative Table of Content for the ESMP is given in **Annex C.** For all other subprojects potentially causing low level of environmental and or social impacts, the only assessment required will be the screening carried out with the help of the checklist provided in **Annex B**.

7.3 Institutional Arrangements

The activities and investments under the Project will be implemented at: a) Federal Level; b) Province of Punjab; and, c) AJK. While Components 1 and 3 will be implemented in Punjab and the AJK only, the bulk of activities under Component 2 need to be implemented at the Federal Level.

Project Implementation Units

At the Federal level, a PIU would be created at the Pakistan Meteorological Department (PMD). For AJK, a PIU will be set up the Planning and Development (P&D) Department. In Punjab, Project Implementation Units (PIUs) will be created at the Punjab Irrigation Department and Provincial Disaster Management Authority (PDMA). The PIUs would have overall responsibility for project implementation including, but not limited to, reporting, monitoring and evaluation, procurement, financial management, audit and disbursements, as well as coordination with the line agencies and the Bank. The PIU will be adequately resourced with skill sets and competencies required for project implementation and monitoring.

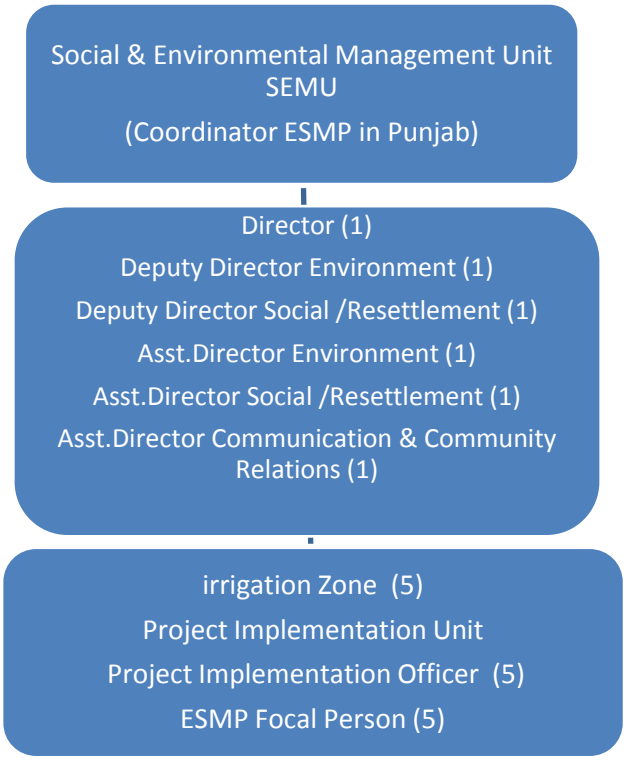
Institutional Arrangement for the Social and Environment Safeguard Management:

The PIUs to be established in (i) Provincial Irrigation Department of Punjab (ii) Planning and Development Department of AJK will be responsible for compliance with ESMF. More specifically, the Project Director of PIU Punjab and Project Coordinator/Director of

PIU-AJK will be overall responsible for the environment and social performance of their respective project components. They will also ensure effective ESMF compliance throughout the project period. In Punjab the Social and Environment Management Unit (SEMU) of PID will be directly responsible for compliance with ESMF and sub-project screening, development of sub-project specific ESMPs and RAPs; and their effective implementation, internal monitoring and progress reporting. SEMU will be supported by an additional Environment Specialist and a Social Specialist (see **Annex D** for the TOR). Additionally, the PIU would also support community participation, consultations and other social activities from the sub-project identification to completion stage.

Punjab: Institutional Arrangements

SEMU is presently working under PIDA due to which most of its role is limited to farmers' organizations awareness building and addressing environment and social issues of irrigation system. The present capacity of SEMU is very weak to manage environment and social aspects of the project like DCRIP as per Bank safeguard policies. A recommendation has been made to the GoPb to mainstream SEMU in all activities of the PID. It will greatly help to mainstream environment and social management in PID. SEMU supervision, resource allocation and reporting system also needs improvement. A comprehensive plan for SEMU strengthening and its capacity building with be developed in in close consultation with PID as a part of the Operations Manual, including the establishment of SEMU at Planning and Development (P&D) Department of AJK and its capacity building.

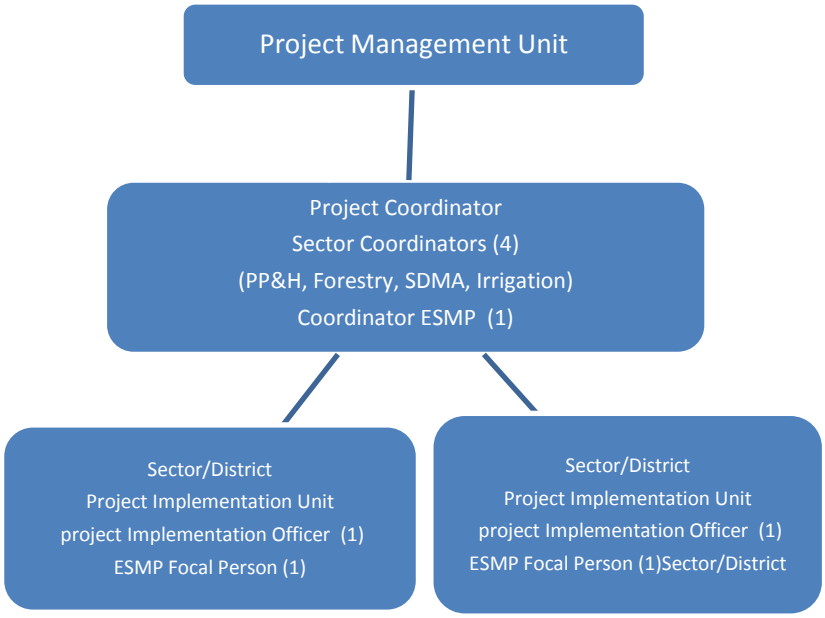


- PIU will be housed in Punjab Irrigation Department headed by a Project Coordinator
- SEMU as part of PIU will be responsible for implementation of ESMP of DCRIP.
- SEMU will be headed by full-time Director and supported by two Deputy Directors and 3 Assistant Directors and required support staff.

- DCRIP will be implemented in 5 Irrigation Zones in Punjab. Five zonal Chiefs will nominate one ESMP Focal Person responsible for Implementation of ESMP in their respective Units
- ESMP of Subprojects will be implemented by the respective Focal Person of the Zone.
- The SEMU Director be the overall coordinator for the ESMP implementation.
- The SEMU Director will define a TOR for the ESMP focal person.
- The ESMP focal person will have a direct link with SEMU Head office for his/her activities and reporting during the entire project period.
- The ESMP Focal person will be responsible for implementation of Environmental and social/resettlement issues, addressing grievances, conduct stakeholders consultations and coordination and reporting to Director SEMU in the PIU.
- Bank will provided training to the PIU staff in Project management, Environmental and social management plans and roles and responsibilities.

AJK Institutional Arrangements

In AJK, the Project Coordinator/Director will be responsible for the environment and social aspects of the project. A Social and Environment Unit (SEMU) will be established at P&D Department level that will be directly responsible for the compliance of ESMF and for the sub-project screening, development sub-project specific ESMPs and RAPs; and their effective implementation, internal monitoring and progress reporting. SEMU will be supported by an additional Environment Specialist and a Social Specialist. Additionally, the PIU would also support community participation, consultations and other social activities from the sub-project identification to completion stage. Additionally, the P&D has designated an environment and social focal point (ESFP) in each line department for the preparation and implementation of sub-project specific ESMPs and RAPs, carry out E&S monitoring, and prepare monthly and quarterly progress reports under his/her respective department. The project will also engage an Environment Specialist and a Social Specialist on an intermittent basis to assist SEMU of Punjab and AJK in overall ESMF implementation, preparation and ESMPs and RAPs, conducting trainings and carrying out monitoring.



- PMU will be housed in P&D AJK-headed by a Project Coordinator
- 4 Sectoral Coordinators will be PMU members representing project specific departments i.e. PP&H, Forestry, SDMA and Irrigation.
- An ESMP Implementation Unit will be established in the PMU under direct supervision of Project coordinator –the unit will be headed by a fulltime ESMP Coordinator and responsible for implementation of Environmental and social/resettlement issues, managing GRM, stakeholders consultations and coordination and reporting to the Bank supervision missions.
- Project specific sectoral /District project Implementation Units will be established in each project area under a sectoral project implementation officer.
- ESMP Focal Person: Each Subproject will have a nominated ESMP focal person.
- The ESMP coordinator will define a TOR for the ESMP focal person.
- The ESMP focal person will have a direct link with ESMP coordinator for his/her activities and reporting during the entire project period.
- The ESMP Focal person will be responsible for implementation of Environmental and social/resettlement issues, addressing grievances, conduct stakeholders consultations and coordination and reporting to ESMP Coordinator in the PMU.
- Project specific sectoral /District project Implementation Units will be established in each project area under a sectoral project implementation officer.
- Bank will provided training to the PMU and PIU staff in Project management, Environmental and social management plans and roles and responsibilities.

7.4 Monitoring

ESMF monitoring will be carried out to ensure that the mitigation plans are regularly and effectively implemented. It will be carried out at three levels. At the PIU level, the environment and social specialists will carry out ESMF monitoring to ensure that the mitigation plans are being effectively implemented, and will conduct field visits on a regular basis. At the field level, more frequent ESMF monitoring will be carried out by

the relevant staff (of construction supervision agency), under the guidance and supervision of Social and Environment Specialist. Monitoring checklists will be prepared and the subproject-specific mitigation plans included in the ESMPs. Finally, the project will engage specialists/firms to conduct external monitoring as third party validation on an annual basis (see **Annex D** for ToR). The subproject-specific monitoring requirements will be defined in the respective ESMP. A format for Quarterly Progress has been given as Annex E.

7.5 Capacity Building

The objectives of the environmental and social trainings include providing basic knowledge and information on the key environmental and social issues associated with the proposed interventions to the key project personnel including the safeguards focal persons, other PIU staff, and project beneficiaries.

The training plan is presented in **Table 7.2**. The environmental and social specialists will be responsible for the implementation of this plan, including providing trainings. At the subproject sites, the field staff will be responsible to provide such trainings to their construction staff and workers. Additional capacity building requirements may be included in the ESMPs of the subprojects.

Table 7.2: Environmental and Social Training Plan

Description	Aspects to be Covered	Participants	Responsibility	Frequency
Environmental and social Trainings	Environmental and social awareness; Key environmental and social issues associated with the project and subprojects ESMF findings; Subproject-specific ESMPs and their components; ESMP implementation. Subproject screening; Subproject monitoring and reporting; Involuntary resettlement; GRM; Community consultations	PIU staff, focal persons, stakeholder communities	Environment Specialist and Social Specialist	At the start of the project; Afterwards as required but at least once in a quarter.
	ESMP implementation, OHS aspects	Contractor staff and workers	Contractors	On-going; at least once in a month.

The Environment and Social Specialist will be responsible for preparing the reports for each training conducted by the PIUs. Similar reports will be prepared by the contractors also for the trainings conducted by them. The training reports will include the summary

of proceeding, objectives of the training, copy of the training materials and presentations, list of resource persons and list of participants.

7.6 Grievance Redressal Mechanism

The PID-Punjab and P&D-AJK developed an appropriate and context specific framework for Grievance Redressal Mechanism (GRM) for the project in their respective projects/PIUs. Each PIU will establish a Grievance Redressal Committee (GRC) headed by the Project Director of each IA to implement project level GRM. The GRC will be responsible for the resolution of complaints including complaints related to environment and social performance of the project. Field level GRCs will be developed in each of the field offices responsible for the designing and implementation of sub-projects. Field level GRC will be first level for registering and resolving complaints. The Framework for GRM is provided below, but a detailed GRM will be developed and included in the Operations Manual. The GRM framework is given as under:

Scope and Objectives: The scope of GRM will be the entire project implementation including the directly and indirectly affected population. The objective is to help project management to enhance operational efficiency by generating public awareness about the project and its objectives; deterring fraud and corruption; mitigating risk; providing project staff with practical suggestions/feedback that allows them to be more accountable, transparent, and responsive to beneficiaries; assessing the effectiveness of internal organizational processes; and increasing stakeholder involvement in the project.
The PIUs will develop operating procedures, guidelines, and flowcharts detailing how the grievance redress process will unfold within the project's operating structures and how it will be monitored and reported on. Grievance redress processes will be part of the project's operational manual.

The GRM for PID Punjab and P&DAJK is designed primarily to function at the project level. The GRM framework presented here is equally applicable to both basic grievance redress systems and those that are oriented to advanced information technology. In applying this framework, project managers must take into account the project's unique operating context i.e. the size of the project implementation unit (PIU), types of services delivered, beneficiaries' needs, and technical, financial, and human resource constraints. The basic requirement is a dedicated resource for handling grievances of the direct affectees from the project or about a particular program area.

GRM Building Blocks:

Effective GRMs are typically built on five core building blocks - 1) Organizational commitment; 2) Principles; 3) People 4) Process; and 5) Analysis.

Organizational Commitment: The project's management and staff recognize and value the grievance process as a means of strengthening public administration, improving public relations, and enhancing accountability and transparency. Grievance redress is integrated into the project's core activities. The PIU will regularly review grievances data

and trends at project management meetings. The Project Director will also ensure that the GRM is properly staffed and resourced.

Principals: The PID and P&D-AJK will be committed to apply six core principles of an effective GRM i.e.

I. Treat grievances confidentially, assessed impartially, and maintain transparently;
II. Operate independently to guarantee objective and impartial treatment to all
III. Adopt simple and understandable procedures procedure and accessible to all irrespective to remoteness, language, education and income levels;
IV. Be responsive to the needs of all complainants and take effective action and respond efficiently to the grievances ;
V. All grievances, simple or complex, will be addressed and resolved in a swift, decisive, and constructive manner; and
VI. By adopting a participatory and social inclusion approach.

The people (staff) working in grievance redress will be committed and experienced in learning opportunities, systematic review and feedback processes. For a large decentralized project (such as DCRIP) in Punjab and AJK, the PIUs would need to accord high priority to GRM.

Process or Value Chain Stages: Grievance redress processes play an important role in project activities. The PIU will clearly define and publicize the six stages of the "value chain," i.e. i) Uptake or grievance collection method; ii) how it will sort and process the grievances; iii) how it will send Acknowledgment receipts and Follow-up the grievance; iv) what Verification, investigation, and action tools will be used; v) Monitoring and evaluation process; and vi) feedback to the organization, donor and the public / media. The value chain of an effective GRM is further defined in the Table below.

Table: Value Chain of an effective GRM (Punjab &AJK)

GRM Area	Activities /Action Required
Complaint uptake and receipt	▪ a specific e-mail id and phone/fax (Toll Free) number for receiving feedback (e.g., inquiries, suggestions, concerns, and grievances). ▪ Will set up a suggestion/grievance box that is easy to access. ▪ Will designate a nodal GR coordinator to receive, log, monitor, and track grievances. ▪ Grievances can be registered in grievance log books manually. ▪ Modify the project website to create a permanent sub window that facilitates grievance collection; include a section of Frequently Asked Questions (FAQs) associated with providing different forms of feedback (inquiries, grievances, suggestions).
Grievance sorting, processing, investigation, and	▪ Will suggest timeframes and procedures to receive, log, monitor, and track grievances and respond to complainants. ▪ Will assign GR resolution responsibilities to existing staff

action	(e.g., those involved in monitoring and evaluation).
Monitoring, tracking, and evaluation	▪ Design a simple, easy-to-use, excel-based or log-book-based grievance registration and monitoring database (this can be converted into a real-time web-based database if the number of grievances is high and resources permit). ▪ Regularly review feedback received, cases resolved, and GR trends in project management meetings,.
communication for effective GRMs	▪ Present GR processes on project website. ▪ Design, create and disseminate a brochure/flier on "Providing complaints feedback" in local languages. ▪ Include a line inviting feedback on all project publication/ communication material.

The PIUs will regularly analyze reports and other monitoring and evaluation data on grievances. Grievance-related data will provide management with insights into the effectiveness of the PIU's programs and identify problem areas, improve internal processes, enhance service delivery, and reduce the incidence of grievances in the future.

7.6.1 The Grievance Redress Framework

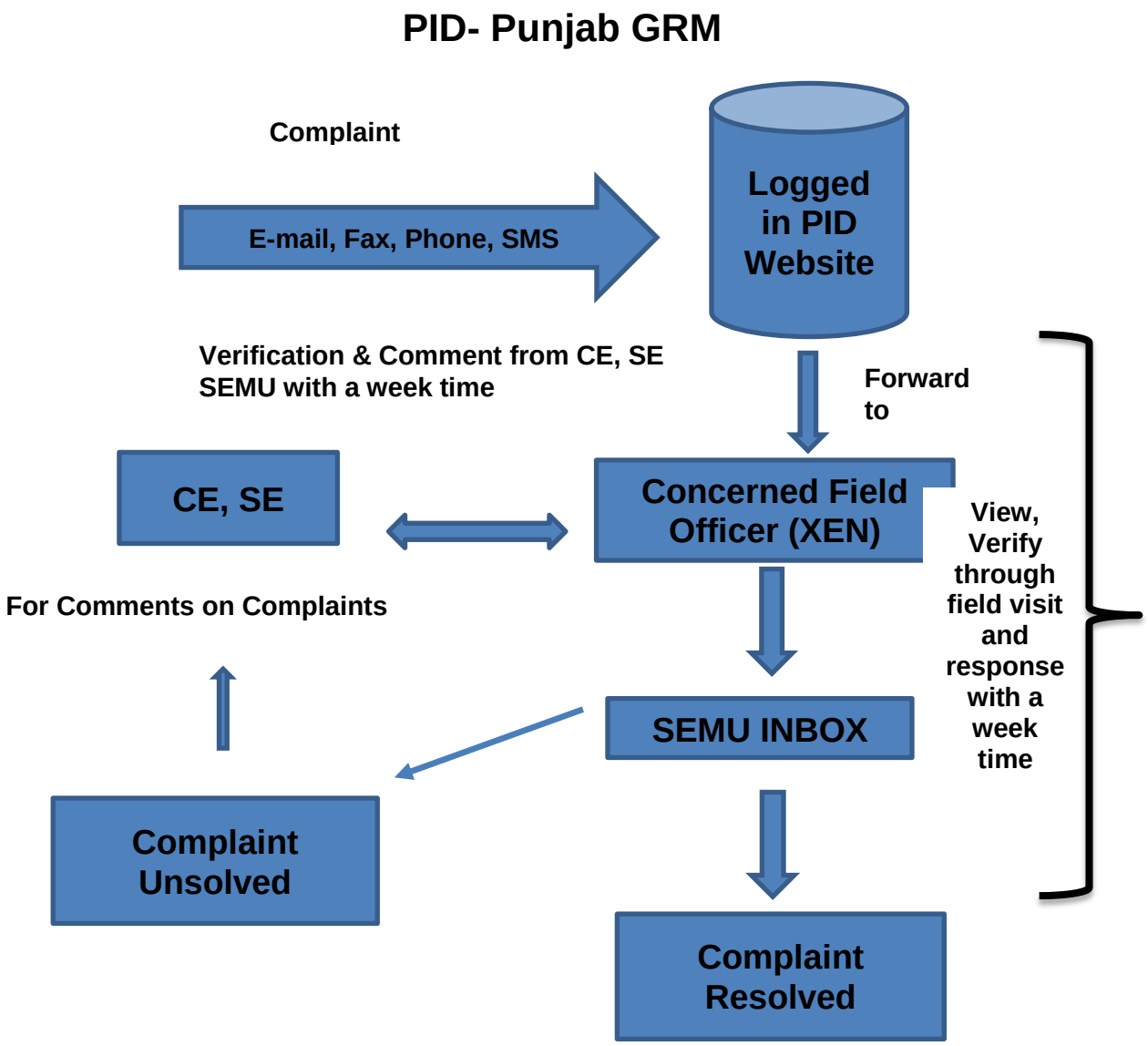
Keeping in view of the building blocks and the value chain considerations, the PID and P&D-AJK agreed to develop an innovative GRM for the DCRIP project. The proposed GRMs developed meet the standard international practices for designing effective GRM such as study of existing formal and informal systems; estimation of users and assess available resources; developing standard operating procedures/flowcharts (see fig.1); possibilities of developing and maximizing GR policies; availability of and training of staff in GR tasks; stimulate external demand for GRM. The proposed GRMs have common building blocks and characteristics: multiple grievance uptake locations and multiple channels for receiving grievances; will have fixed service standards for grievance resolution; clear processing guidelines; and an effective and timely grievance response system to inform complainants of the action taken. The framework and key features of both generic systems are presented in section 3.1 and section 3.2 below.

7.6.2 PID-Punjab: Proposed GRM Framework

Key Features of the PID-Punjab GRM

- At the outset, the PIU will entrust one person with the responsibility of coordinating grievances. This Nodal Coordinator will receive and sort grievances; forward them to appropriate staff members for resolution; track and monitor grievance acknowledgement and resolution; and review and report on grievance data and trends to the PIU. The Nodal Coordinator as the first point of contact will try to respond to as many inquiries/comments as possible.
- The system will open multiple channels for receiving feedback. The Possible channels for receiving feedback will be easily and quickly rolled out at minimal expense are mail, fax, e-mail, website, and telephone.
- The critical feature of this system will be assigning a specific e-mail ID and a phone/fax number, and to set up an easy-to-access suggestion/feedback box.
- The project website will be modified to create a permanent sub-window that facilitates grievance collection.

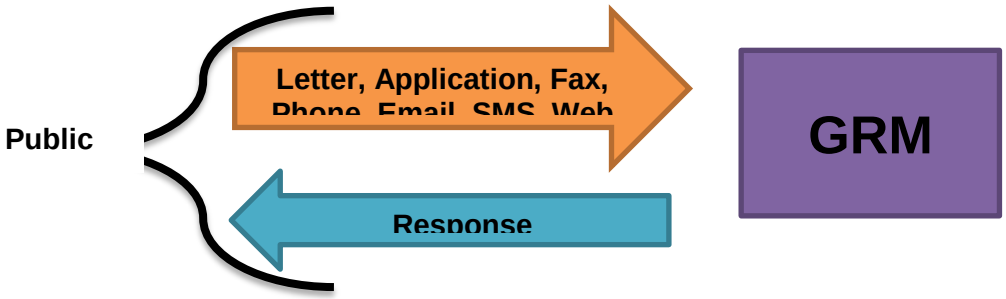
- A simple grievance form/template (and if need be, other forms of suggestions, inquiries, complaints, etc.) will be designed and uploaded on the external website.
- Hard copies of the feedback form will be provided at access points and suggestion/ feedback box.
- Finally, a simple, easy to use, excel-based or log-book-based grievance registration and monitoring database will be designed to monitor and track all grievances that have been received and resolved.
- Grievances will be assigned a unique ID to facilitate their tracking.


PID- Punjab GRM
Complaint
E-mail, Fax, Phone, SMS
Logged in PID Website
Verification & Comment from CE, SE SEMU with a week time
Forward to
CE, SE
Concerned Field Officer (XEN)
View, Verify through field visit and response with a week time
For Comments on Complaints
SEMU INBOX
Complaint Unsolved
Complaint Resolved

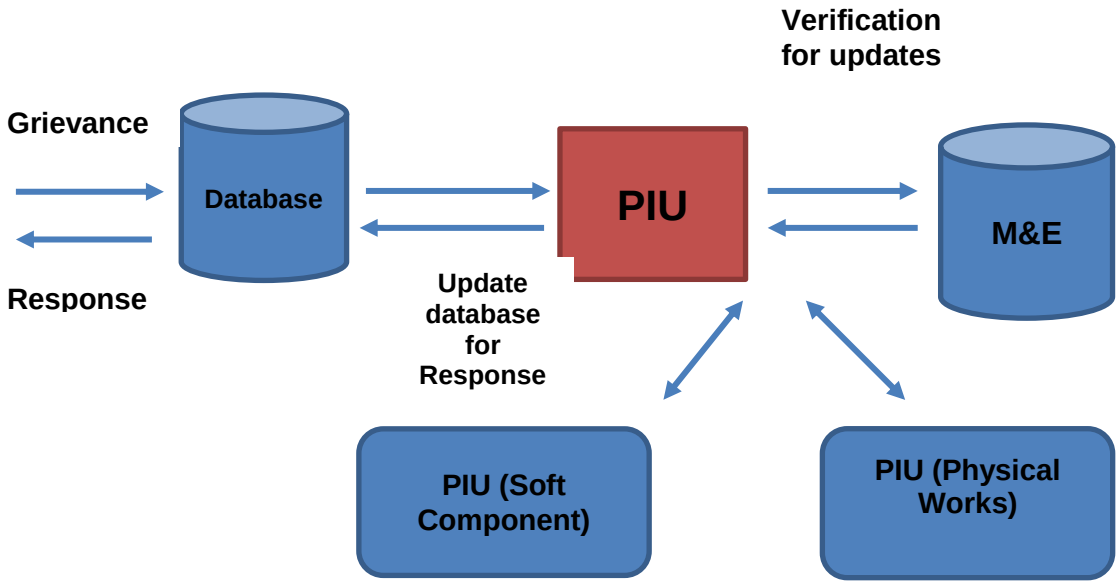
7.6.3 AJK Proposed Framework

- At the outset, the PIU will entrust one person with the responsibility of coordinating grievances. This Nodal Coordinator will receive and register grievances; forward them to appropriate staff/section for resolution; track and monitor grievance acknowledgement and resolution; and review and report on grievance data and trends to the PIU. The Nodal Coordinator as the first point of contact will try to respond to as many inquiries/comments as possible.
- The system will open multiple channels for receiving feedback. The Possible channels for receiving feedback will be easily and quickly rolled out at minimal expense are mail, fax, e-mail, website, and telephone.
- The critical feature of this system will be assigning a specific e-mail ID and a phone/fax number, and to set up an easy-to-access suggestion/feedback box.
- The project website will be modified to create a permanent interface that facilitates grievance collection & registration.
- A simple grievance form/template (and if need be, other forms of suggestions, inquiries, complaints, etc.) will be designed and uploaded on the external website.
- Hard copies of the feedback form will be provided at suggestion/ feedback box.
- Finally, a simple, easy to use, web based grievance registration and monitoring database will be designed to monitor and track all grievances that have been received and resolved.
- Grievances will be assigned a unique ID to facilitate their tracking.
- Detail fiscal and temporal information of Sub-Project under DCRIP will also be uploaded on the website, it will also allow/generate periodic progress for the project as well as subprojects.
- Each sub-project will have a geo-reference based on the GPS attributes.

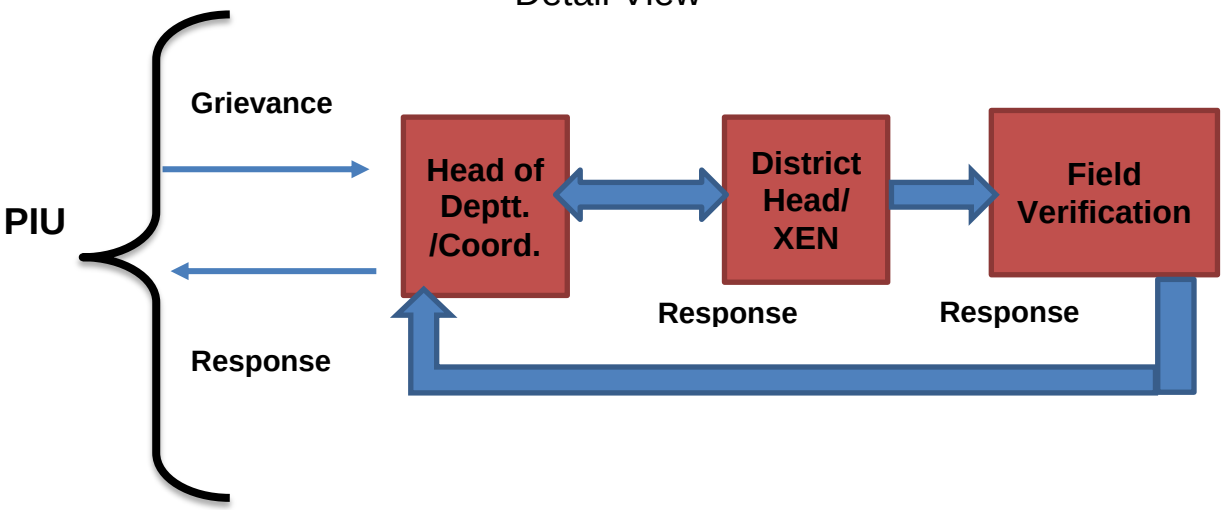
P&D AJK GRM System Overview
Black Box



P&DAJK GRM
Abstract View



P&DAJK GRM
Detail View



7.7 Reporting and Documentation

Complete documentation will be maintained for the entire ESMF implementation process. This will include the following:

- Environmental and social monitoring checklists filled by the focal persons and specialists,
- Visit reports and monitoring reports with photographs prepared by the Environment Specialist,
- Training reports to be prepared by focal persons and Environment Specialist and Social Specialist,
- Quarterly reports on overall ESMF implementation of the project, to be prepared by the specialists,
- Annual third party monitoring reports,
- Project completion report on overall ESMF implementation during the entire duration of the project – to be prepared by specialists.

The environmental and social specialists will be overall responsible for the above documentation and reporting (see **Annex E** for the reporting formats). Additional reporting requirements may be included in the ESMPs of the subprojects.

7.8 ESMF Disclosure Requirements

The ESMF shall be uploaded on the project websites, hard copies shall be sent to all institutional stakeholders and all regional offices. The ESMF shall be disclosed internally within the Bank and shall be released in InfoShop. Before start of physical works on the project, the ESMF shall be translated in local languages and shall be communicated to stakeholder communities and will be uploaded on the project websites. The ESMPs of the subprojects will also be disclosed and available on official websites of the implementing agencies.

The communities and individuals who believe that they are adversely affected by the World Bank (WB) financed project may submit complaints under established project-level grievance redress mechanism or the World Bank's Grievance Redress Service (GRS). The project level GRM and the World Bank GRS ensure that complaints received are promptly reviewed in order to address them. If complaints are not resolved by the project level mechanism or GRS, the complainants may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org. In addition to this, the complainants have a right to file their complaints in the court of law.

7.9 Inclusion of Checklists and ESMPs in Contract Documents

The filled checklists for smaller subprojects and ESMPs/RAPs for larger sub-projects will be included in the construction contracts and their implementation will be a contractual binding for the contractors. In addition, the guidelines included in **Annex F** and **Annex G** will also be made part of all contractor contracts.

7.10 ESMF Implementation Estimated Budget

The cost estimates to implement ESMF is provided in **Table 7.3** below. This cost is included in the overall project cost. Additional costs could be included in the sub-project specific ESMPs.

Table 7.3: ESMF Implementation Budget

Description	Cost (million PKR)	Basis
Environment Specialist	10.8	2 @ PKR150,000 per month each for 3 years
Social Specialist	10.8	2 @ PKR 150,000 per month each for 3 years
Third party validation	6.00	2 m per year × 3 years
ESMP Preparation	5.0	Expected ten @ PKR 500,000 each
ESMP Trainings	3.0	24 trainings at the PIU level (12 quarters x 2 PIUs x PKR 125,000 per training)
Miscellaneous expenses	6.00	PKR 2 m per year × 3 years
Total (for 3 years)	**41.6**	**(about USD 410,000)**

8. Resettlement Policy Framework (RPF)

Introduction

This Resettlement Policy Framework (RPF) has been prepared jointly by the Provincial Irrigation Department of Punjab and the Planning and Development Department off AJK under the Disaster and Climate Resilience Improvement Project (DCRIP), as required under the World Bank OP/BP 4.12 Involuntary Resettlement. The Implementing Agencies (IAs) of Punjab and AJK committed to make all possible efforts to use the free of cost lands through voluntary donations of communities' common lands, land donations by local/ district governments or other government line agencies; and fully and sufficiently mitigate any possible adverse impacts associated with the subprojects under DCRIP.

Voluntary Land Donation: Both the IAs will completely avoid land acquisition. Whenever there is additional land requirement, the IAs will interact with the land owners and facilitate voluntary donation of land required for taking up sub-projects under the project. This use of voluntary donation option will be limited to small strips of land along the flood embankments. Under no circumstances, the titleholder shall be subjected to any pressure, directly or indirectly, to part with the land. These actions are expected to minimize adverse impacts on the local population and help in project benefits reaching all sections of community. The IAs will ensure that the process of voluntary donation of land is meticulously documented to avoid confusions, misunderstandings, litigations, etc. at a later stage. A Framework and format for this purpose is enclosed as Annex-G.

Purpose of Resettlement Policy Framework

The purpose of this RPF is to provide policy and legal framework and procedures to mitigate unavoidable resettlement impacts. These procedures are in conformity to the World Bank OP/PB 4.12 on Involuntary Resettlement, as well as the applicable laws and Regulations of GoPb and GoAJK. Consultations carried out with potentially affected persons and intended beneficiaries including most vulnerable communities, and institutional stakeholders. RPF will define objectives and principles of resettlement, provide estimation of magnitude of any potential impacts, organizational arrangements and funding mechanism for RAPs. The RPF consulted and will be disclosed in country and via the World Bank InfoShop.

World Bank Involuntary Resettlement Policy (OP 4.12)

The WB's experience indicates that involuntary resettlement under development projects, if unmitigated, often gives rise to severe economic, social, and environmental risks: production systems are dismantled; people face impoverishment when their productive assets or income sources are lost; people are relocated to environments where their productive skills may be less applicable and the competition for resources greater; community institutions and social networks are weakened; kin groups are dispersed; and cultural identity, traditional authority, and the potential for mutual help are diminished or lost. The OP4.12 provides safeguards to address and mitigate these impoverishments risks. The overall objectives of the Policy are:

- Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternatives of sub-project designs.
- Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs to enable the persons displaced by the project to share in project benefits.
- Project affected persons should be meaningfully consulted and should have opportunities to participate in planning and implementing RAP.
- Assist project affected persons to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre sub-project level.
- The Policy defines the requirement of preparing a resettlement plan or a resettlement Policy Framework, in order to address the involuntary resettlement.

The key Principles of World Bank Involuntary Resettlement Policy are:

i. The need to screen the project early on in the planning stage,
ii. Carry out meaningful consultation,
iii. At the minimum restore livelihood levels to what PAPs were before the project, improve the livelihoods of affected vulnerable groups
iv. prompt compensation at full replacement cost is to be paid,
v. Ensure that PAPs who have no statutory rights to the land that they are working, are eligible for resettlement assistance and compensation for the loss of land or assets
vi. Disclose all reports.

Scope and Triggers: The Involuntary Resettlement Policy (OP/BP 4.12) is triggered by the project as restoration of flood protection infrastructure under sub-component 1.1, could potentially lead to involuntary resettlement impacts (temporary or permanent) due to encroachment on government lands, for agriculture construction of *kacha* rooms for grain/agriculture input, animal sheds and grazing. The construction activities may also involve use of some lands for temporary purposes, such as storage of construction material, establishment of construction camp. In case of resettlement impacts, the IAs of Punjab and AJK will be responsible for undertaking a social impact assessment and preparing a Resettlement Action Plan (RAP) for each subproject in line with this RPF and submit to the World Bank for review and clearance, prior to award of the civil works contract for the respective subprojects. IA will also engage a third-party for validation of RAP implementation.

Resettlement Processing Requirements

Early screening will be done for every sub-project right after identification. Early Screening will help to select sites where lands will be free from all encumbrances. Resettlement impacts will be avoided or, where this is not possible, then minimized. If resettlement impacts are likely to occur, a social impact assessment survey will be conducted to assess the type and magnitude of resettlement impacts. A Resettlement Action Plan (RAP) will be prepared based on the detailed design of the proposed subproject, by following the principle laid down in RPF. The RAP with a detailed compensation and/or rehabilitation plan will be implemented before access to the land for civil works is allowed.

A rapid resettlement impacts screening exercise of indicative sub-projects was conducted to identify possible adverse social impacts. Efforts will be made to avoided, minimized,

and/or mitigate/compensate resettlement impacts and a screening mechanism will be laid down. This will allow the possibility to exclude certain activities/sub-projects if the environmental or social impacts are immense.

The screening of each subproject will analyze impacts and requirements for Resettlement Action Plan (RAP) will be identified.

A subproject level Social Impact Assessment (SIA) will be undertaken; the SIA will clarify the nature and extent of potential impacts and benefits including any impacts on poverty, vulnerable groups and gender. SIA will identify subproject specific stakeholders and describe the mechanisms adopted for consultation and their outcome. Consultation will be carried out with key stakeholders including potentially affected and intended beneficiary benefitted communities, institutional stakeholders and other groups, which will be involved in project designing and implementation. And RAP will be prepared in order to analyze and develop mitigation measures for any identified impacts. Appropriate grievance-handling procedures and arrangements for monitoring the RAP implementation will be in place and managed by the PIUs of IAs

Compensation Eligibility and Entitlements for Affected Persons:

The Project Affected Persons, (PAPs) will be eligible for compensation or rehabilitation provisions under the DCRIP are:

(i) All persons losing encroached lands or non-land assets, i.e. crops and trees.

(ii) Tenants and share-croppers of leased land whether registered or not

(iii) All encroachers and squatters losing structures on encroached lands;

(v) PAPs losing business or income from temporary use of land for construction related activities, such as disturbance to land, crops, and business operations both permanently and also temporarily during construction;

(vi) Loss of communal property, lands and public infrastructure;

(vii) Vulnerable PAPs identified through the social impact assessment (SIA);

(viii) In the event of relocation from encroached lands, all displaced persons will receive transitional and other support to re-establish livelihoods

(x) The affected persons will be eligible for rehabilitation subsidies and for the compensation of lost land, structures and utilities along with loss of livelihood.

(xi) There will also be special provisions for vulnerable displaced persons i.e. very old, physically or mentally handicapped, poor below the poverty line, widows, women-headed household, and socially isolated.

The compensation and rehabilitation entitlements are summarized in the Entitlement Matrix below:

Asset	Specification	Affected People	Compensation Entitlements

Arable Land Temporary land Use during construction period	Access is not restricted and existing or current land use will remain unchanged	Farmer/ Titleholder	• Full compensation for crops and trees for the period land used for temporary used. • Land rehabilitated/restored to its former quality following completion of works; • Compensation, in cash, for all damaged crops and trees as per item below
		Leaseholder *(registered or not)*	• Cash equivalent to market value of gross yield of affected land for the temporary use period. • Land rehabilitated/restored to its former quality following completion of works; • Compensation, in cash, for all damaged crops and trees
		Sharecroppers *(registered or not)*	• Compensation, in cash or kind, for all damaged crops and trees
		Agricultural workers	• Compensation, in cash or kind, for all damaged crops and trees
		Squatters / encroachers	• Compensation, in cash, for all damaged crops and trees
		Leaseholder *(registered or not)*	• 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 compensation equal to the 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.
	Additional provisions for severe impacts (More than 10% of land loss)	Farmer/ Leaseholder	• 1 severe impact allowance equal to market value of gross harvest of the affected land for 1 year (inclusive of winter and summer crop and additional to standard crop compensation)
		Sharecroppers *(registered or not)*	○ 1 severe impact allowance equal to market value of share of harvest lost (additional to standard crop compensation).
		Squatters	• 1 severe impact allowance equal to market value of gross harvest of the affected land for 1 year (inclusive of winter and summer crop and additional to standard crop compensation)
		Squatters	• Accommodation in a government resettlement area or a self-relocation allowance
Houses and Structures		All relevant APs (including squatters)	• Cash compensation at replacement rates for affected structure and other fixed assets free of salvageable materials, depreciation and transaction costs. In case of partial impacts full cash assistance to restore remaining structure.
Crops	Crops affected	All APs (including squatters	• Crop compensation in cash at full market rate for two harvests or project period by default for impacts caused by infrastructure development. • All other crop losses will be compensated at market rates based on actual losses.
Trees	Trees affected	All APs (including squatters)	• Cash compensation shall reflect income replacement

Business Employment	Temporary or permanent loss of business or employment	All APs (including squatters)	• Business owner: (i) Cash compensation equal to one year income, if loss is permanent; (ii) cash compensation for the period of business interruption, if loss is temporary. • Worker/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 APs affected by relocation	• Provision of sufficient allowance to cover transport expenses and livelihood expenses for one month.
Community assets			• Rehabilitation/substitution of the affected structures/utilities (i.e. mosques, footbridges, roads, schools, health centers, etc.)
Vulnerable AP livelihood		AP below poverty line	• Subsistence grants to displace poor /vulnerable families. • Employment priority in project-related jobs.
Unforeseen / unanticipated impacts			• Any unforeseen/ unanticipated impacts due to the sub-projects will be documented and mitigated based on the spirit of the principle agreed upon in this framework

Compensation Eligibility

Compensation eligibility will be limited by a cut-off date for each subproject on the day of the beginning of the census survey for the impact assessment in order to avoid an influx of outsiders. Each affected person will be identified and issued with an identification which confirms their presence on the proposed site of a sub-project prior to the cut-off date. The cut-off date will be announced through local means of communication including face-to-face communication with communities. Any persons who would settle/or build assets on encroached lands in the affected areas after the cut-off date will not be eligible for compensation.

Valuation and Replacement of Assets:

The following methodology will be adopted for assessing unit compensation rates:

- Rent for temporary use of land will be fixed as per prevailing market rate in agreement of affected person.
- Houses and other structures will be valued at replacement cost plus labor cost based on the area, type and material of the affected item. No deductions will be made for depreciation, salvageable materials or transaction costs and taxes. Rates for building structures will be evaluated by the Works and Services Department using the latest/current Composite Schedule Rates that are regularly published by the Works and Services Department, Government of Punjab and AJK
- Crops will be valued at current market rates of gross value of harvest as valued by the Agricultural Department.
- The loss of fruit bearing trees will be compensated for based on their type, productive age and the market value of the produce for the remaining period of its average life. The value of younger fruit trees will be based on the expenditure made to bring the tree to its current state. This will be assessed by the Horticultural Wing of the Agriculture Department.

- The value of trees that would have been used for timber will be calculated based on the average volume and quality of wood produced and taking into consideration the size classes as determined by girth, diameter at breast, height and volume as assessed by the Forest Department.

Social Impact Assessment and Preparation of Resettlement Action Plan

Social Impact Assessment: RAP preparation activities will be initiated as part of the preparation of each new sub-project involving resettlement impacts. The requirement will be to take the completed detailed design of proposed flood protection structure and carry out a measurement survey and enumeration. The field office of IA will acquire map of the land from the Revenue Department and overlay sub-project detailed design with clear demarcation of government land, and also do demarcation on the ground in the presence of local community representatives in a transparent manner to avoid any confusion. After assessment of all impacts of a sub-project, a Resettlement Action Plan will be prepared to compensate/mitigate the identified impacts. Any unforeseen or additional impacts will be mitigated in the light of principles and procedures laid down in RPF. An outline for preparing a Resettlement Action Plan based on the Bank's standards of Resettlement Policy is attached as annex with this RPF; the appraisal will entail the following studies and investigations:

Socioeconomic Survey: A socio-economic survey of 25% project affected households (AHs) will be carried out to provide a detailed socio-economic profile of the population in the project areas. The information gathered will focus on: (i) household composition and demography; (ii) ethnicity; (iii) education; (iv) livelihood patterns and income baseline; (v) land ownership patterns; (vi) displaced persons income levels and expenditure patterns; (viii) displaced persons views on the subproject and various resettlement and rehabilitation options; (viii) specific impacts on the poor, women and other vulnerable groups. The data will be gender disaggregated to identify specific gender related issues. The survey will be used to investigate the PAPs socio-economic condition, identify the project impacts on PAPs and to establish a benchmark for monitoring and evaluating the implementation of a subproject's compensation and rehabilitation program.

Census Survey: A census of all AHs will be undertaken based on the categorizations in the entitlement matrix. The Census will determine the exact number of AHs/PAPs and how they affected by the specific impacts of a subproject. The Census will also identify all severely and vulnerable AHs.

Impacts Assessment and Inventory: This task will be based on a Detailed Measurement Survey (DMS) which identifies the nature and magnitude of loss. The survey will include all losses including encroached land (residential and agricultural), immovable structures, communal, public and cultural/religious facilities, crops, trees and business incomes and wages. The impact assessment will also include a survey of compensation rates as detailed above and also the incomes of the AHs.

Gender Impacts, Social Inclusion and Mitigation Measures *RAP* will include measures ensuring that the socio-economic needs and priorities of women and other marginalized groups are identified, addressed and mitigated. The following gender provisions will be

incorporated to safeguard the specific needs and problems of women, displaced persons or other marginalized during subproject implementation. The socio-economic data gathered will be gender-disaggregated. Gender roles analyzed and the needs, aspirations and priorities of women will be taken into consideration during consultation and preparing mitigation measures and reported in the RAP. Female staff will be hired to collect data and assist women in consultations, resettlement options and activities. Female household heads will be registered as the recipients of compensation and rehabilitation measures due to their households. Women and marginalized groups will be included in the consultation process through meetings and will be encouraged to participate in the RAP planning and implementation process. Due consideration will be given to complaints and grievances lodged by women and marginalized PAPs following the procedures outlined in this RPF.

Resettlement Action Plans (RAPs) Preparation

All RAPs will be based on the provision outlined in this RPF. The RAPs may need to be updated to take into account changes in the final designs or any unforeseen or additional impacts during the construction phase. The RAPs should be updated (i) on the completion of detailed engineering design but prior to the award of civil works contracts and (ii) during the subproject civil works where design changes during construction result in changes to the resettlement impacts. Land will not be possessed until all amended RAPs addendum to a RAP get approved by the World Bank, payments made and PAPs vacate the land within the agreed notice period, mentioned in the RAP of a sub-project. The RAPs will include a time bound program which is related to the date that the land is required for construction purposes.

Consultation, Participation and Disclosure/ Access to Information

Stakeholder Consultation

Consultations with potential affected persons and beneficiaries were carried out including vulnerable communities, potential affectees, intended beneficiaries of and indicative sub-projects. Also with district governments, provincial line departments, and other stakeholders mentioned in the ESMF chapter of stakeholders consultations. Further consultations will be carried out particularly with affected persons, beneficiaries and other key stakeholders during preparation and implementation of RAPs. The timing and nature of these consultations will vary depending upon the implementation program. Sub-project specific stakeholders will be identified through the initial social impact assessment of a subproject. Stakeholder consultations will be carried out over the preparation of the subproject through community meetings, focus group discussions and interviews of key informants for their views and recommendations for the sub-project preparation and implementation. These recommendations will be included in as an annex with the RAP and with description of actions defined in the RAP to address them.

Specific consultations will be carried out with the PAPs to identify their needs and preferences for compensation and rehabilitation measures. In this regard the affected persons, including the displaced persons, will be thoroughly informed on the results of the census and impact assessment and their preferences for compensation and other resettlement assistance will be given due consideration. The processes and mechanisms ensuring the active involvement of PAPs and other stakeholders will be detailed in the

RAPs, which will include an Appendix with the list of participants, the location, date and minutes of consultation meetings.

Information Disclosure Plan

The entire RPF, after its clearance from the World Bank, will be translated into Urdu and disclosed to the public through websites of the IAs and the World Bank InfoShop, and shared with institutional stakeholders, PAPs and beneficiary communities.

Before implementation of the project, a communications strategy will be developed for addressing the requirement for public consultation and participation. The Social Specialist of the IAs will be responsible to ensure that all RAPs are properly and meaningfully disclosed to the PAPs, their concerns addressed and necessary changes made in a subproject design for this purpose.

Before the socio-economic baseline surveys are conducted, the IAs will need to have developed a workable strategy for public consultation and information disclosure, the Social Specialists of the project will take lead assuming this responsibility. During the census and DMS, each affected household will be directly informed about the subproject entitlements and procedures.

The entire RPF will be translated in Urdu and disclosed to the public, stakeholders and PAPs, as and when required, and kept in relevant government departments for the PAPs to access. Arrangements would also be made to provide information to women and other marginalized groups through participatory mechanisms. The PIUs will play a significant role in this process. The consultation process will need to outline the legal procedures that are to be followed if any. The details of the process will have to be clearly communicated to any affected people and in a form that can be easily understood/communicated. The information given should also include the provisions of the OP 4.12 principles and outline the rights and obligations of PAPs. The range of options for compensation can be identified further, along with their entitlements for lost assets in addition to the entitlements outlined in this RPF.

The communities and individuals who believe that they are adversely affected by the World Bank (WB) financed project may submit complaints under established project-level grievance redress mechanism or the World Bank's Grievance Redress Service (GRS). The project level GRM and the World Bank GRS ensure that complaints received are promptly reviewed in order to address them. If complaints are not resolved by the project level mechanism or GRS, the complainants may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org. In addition to this, the complainants have a right to file their complaints in the court of law.

Resettlement Budget and Financing

Due to the emergency nature of DCRIP, a framework approach will be used to identify subprojects for restoration of flood protection infrastructure during project implementation. Therefore, specific locations have not been identified during preparation. Consequently it is difficult to calculate accurate quantities of adverse impacts and any estimate the cost of resettlement.

The detailed cost estimation will be carried out when preparing a sub-project specific RAP in line with this RPF. All RAP preparation and implementation costs, including cost of compensation, various eligible allowances, monitoring, evaluation, grievances redress and RAP administration, as well as contingencies, will be estimated and included in the RAP and they will be considered an integral part of each of the sub-project costs. Each RAP 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 contingencies.

Finances for RAP:
Financing for each subproject specific 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 tasks, the GoPb and GoAJK will have to allocate 100% of the cost of compensation at replacement cost and expected allowances estimated in each RAP plus 10% of contingencies before RAP approval or implementation. Being the project owner, The GoPb and GoAJK is responsible for the timely allocation of the funds needed to implement the RAPs. Allocations will be reviewed twice a year based on the budget requirements indicated in RAPs.
Regarding the flow of RAP finances, it is noted that the budget for land, crops, trees, structures compensation will be disbursed by PID and IAs of AJK, through the SEMU of each IA will be responsible to disburse the compensation to the PAPs with assistance from the field offices

Monitoring and Reporting
RAP tasks under the Project subject to both internal and external monitoring. **Internal monitoring** will be conducted by the Social Specialist of PIUs, assisted by the Social Specialist of Supervision Consultants. **External monitoring** will be assigned to a Monitoring and Evaluation (M&E) Consultants who will play the role of External Monitoring Agency (EMA) to be hired by PIU, and will be approved by the World Bank. The EMA will be chosen among local consultants. IAs will prepare the terms of reference (TORs) for the EMAs before RAP implementation begins, which will be cleared by the Bank.

Internal Monitoring:
The entire entitlement matrix and all its components will be monitored along with the status of resolution of all complaints (with details) and also the consultation plan. Internal monitoring will be carried out routinely by the Social Specialist of PIUs and supervision consultants. Results of internal monitoring will be communicated to concerned Affected People and to the Bank through quarterly progress 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 that will report monthly to the Social

Specialists of PIU to assess the progress and results of RAPs implementation, and to adjust the work Program, if necessary. The monthly reports will be consolidated into quarterly reports and a standard progress and supervision report will be sent to the World Bank and other relevant stakeholders. Specific monitoring benchmarks will be information campaign and consultation with PAPs; status of compensation for affected structures and other assets; relocation of PAPs; payments for loss of income; and income restoration activities. This information will be collected by the field offices, responsible for monitoring the day-to-day resettlement activities of a subproject through the 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.

External Monitoring:
The external monitoring will need to monitor the entire process of RAPs implementation including impacts and outcome indicators of the RPF and these indicators will be specified in RAPs. External monitoring will be carried out once a year, and its results will be communicated to all concerned PAPs, the PIUs and the Bank through annual reports. Sub-projects having implementation time-frame under 6 months will be monitored only once. Indicators for External Monitoring tasks include review and verify internal monitoring reports prepared by field offices and Social Specialists of PIUs; review of the socio-economic baseline census information of pre-project conditions; identification and selection of impact indicators; impact assessment through formal and informal surveys of PAPs consultation with PAPs, officials, community leaders for preparing review report; and assess the resettlement efficiency, effectiveness, impact and sustainability, drawing lessons for future resettlement policy formulation and planning for PID and P&D and other relevant government agencies.

The EMA will also assess the status of subproject affected vulnerable groups such as female-headed households, disabled/elderly, and families below the poverty line and socially isolated. The EMA will consider indicators in monitoring and evaluation of sub-projects RAPs such as socio-economic conditions of the PAPs in the post-resettlement period; communications and reactions from PAPs on entitlements, compensation, options, alternative developments and relocation timetables etc.; changes in housing and income levels; rehabilitation of squatters; valuation of assets; grievance procedures; disbursement of compensation; and level of satisfaction of PAPs in the post resettlement period. The EMA will carry out a post-implementation evaluation of the RAP about a year after completion of its implementation. The compelling reason for this study is to find out if the objectives of the RAPs have been attained or not. The benchmark data of socioeconomic survey of severely affected PAPs conducted during the preparation of the RAP will be used to compare the pre and post subproject conditions. The EMA will recommend appropriate supplemental assistance for the PAPs. The outcome of the study will show that the objectives of the RAPs have attained or not.

APPENDIX I: OUTLINE OF A RESETTLEMENT PLAN

This outline is part of the Safeguard Requirements. A resettlement plan is required for all subprojects with involuntary resettlement impacts. The level of detail and comprehensiveness is commensurate with the significance of potential involuntary resettlement impacts and risks. The substantive aspects of the outline will guide the preparation of the resettlement plans, although not necessarily in the order shown.

Executive Summary: This section provides a concise statement of subproject scope, key survey findings, entitlements and recommended actions.

Project Description: This section provides a general description of the project, discusses project components that result in involuntary resettlement, and identify the subproject area. It also describes the alternatives considered to avoid or minimize resettlement. The section is also to include a table with quantified data and provide a rationale for the final decision.

Scope of Land Acquisition and Resettlement: This section discusses the subproject's potential impacts, and includes maps of the areas or zone of impact of subproject activities; describes the scope of resettlement impacts (provide maps) and explains why it is necessary for the subproject; summarizes the key effects in terms of assets acquired and PAPs; and provides details of any common property resources that will be acquired.

Socioeconomic Information and Profile: This section outlines the results of the social impact assessment, the census survey, and other studies, with information and/or data disaggregated by gender, vulnerability, and other social groupings, including: define, identify, and enumerate the people and communities to be affected; describe the likely impacts of land and asset on the people and communities affected; taking social, cultural, and economic parameters into account; discuss the subproject impacts on the poor, indigenous and/or ethnic minorities, and other vulnerable groups; and identify gender and resettlement impacts, and the socioeconomic situation, impacts, needs, and priorities of women.

Information Disclosure, Consultation, and Participation: This section: identifies subproject stakeholders, especially primary stakeholders; describes the consultation and participation mechanisms to be used during the different stages of the subproject cycle; describes the activities undertaken to disseminate subproject and resettlement information during subproject design and preparation for engaging stakeholders; summarizes the results of consultations with PAPs (including host communities), and discusses how concerns raised and recommendations made were addressed in the resettlement plan; confirms disclosure of the draft resettlement plan to displaced persons and includes arrangements to disclose any subsequent plans; and Describes the planned information disclosure measures (including the type of information to be disseminated and the method of dissemination) and the process for consultation with displaced persons during project implementation.

Grievance Redress Mechanisms: The describe mechanisms to receive and facilitate the resolution of PAPs' concerns and grievances. The GRM laid down in the ESMF will be applicable to RPF as well. Each RAP will develop context specific GRM mechanism as part of PIU level GRM.

APPENDIX-II: POLICY PRINCIPLES

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.

Carry out meaningful consultations with displaced persons, host communities, and concerned non-government organizations. Inform all displaced persons of their entitlements and resettlement options. Ensure their participation in planning, implementation, and monitoring and evaluation of resettlement programs. Pay particular attention to the needs of vulnerable groups, especially those below the poverty line. These include the landless, the elderly, women and children.

Establish a grievance redress mechanism to receive and facilitate resolution of the displaced persons' concerns.

Improve, or at least restore, the livelihoods of all displaced persons through (i) land-based resettlement strategies when affected livelihoods are land based and where it is possible to give 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 these are possible.

Provide physically and economically displaced persons with needed assistance, including the following: (i) if there is relocation, secured tenure to relocation land, better housing at resettlement sites with comparable access to employment and production opportunities, integration of resettled persons economically and socially into their host communities, and extension of project benefits to host communities; (ii) transitional support and development assistance, such as land development, credit facilities, training, or employment opportunities; and (iii) civic infrastructure and community services, as required.

Improve the standards of living of the displaced poor and other vulnerable groups, including women, to at least national minimum standards. In rural areas provide them with legal and affordable access to land and resources, and in urban areas provide them with appropriate income sources and legal and affordable access to adequate housing.

Develop procedures in a transparent, consistent, and equitable manner if land acquisition is through negotiated settlement to ensure that those people who enter into negotiated settlements will maintain the same or better income and livelihood status.

Ensure that displaced persons without titles to land or any recognizable legal rights to land are eligible for resettlement assistance and compensation for loss of non-land assets.

Prepare a resettlement plan elaborating on displaced persons' entitlements, the income and livelihood restoration strategy, institutional arrangements, monitoring and reporting framework, budget, and time-bound implementation schedule.

Disclose a draft resettlement plan, including documentation of the consultation process in a timely manner, before project appraisal, in an accessible place and a form and language(s) understandable to displaced persons and other stakeholders. Disclose the resettlement plan and its updates to displaced persons.

Conceive and execute involuntary resettlement as part of a development project. Include the full costs of resettlement in the presentation of project's costs and benefits. For a project with significant involuntary resettlement impacts, consider implementing the involuntary resettlement component of the project as a stand-alone operation.

Pay compensation and provide other resettlement entitlements before physical or economic displacement. Implement the resettlement plan under close supervision throughout project implementation.

Monitor and assess resettlement outcomes, their impacts on the standards of living of displaced persons and whether the objectives of the resettlement plan have been achieved by taking into account the baseline conditions and the results of the resettlement monitoring. Disclose monitoring reports.

Annex A. National Environmental Quality Standards

The National Environmental Quality Standards (NEQS), promulgated under the PEPA 1997 and revised in 2010, specify the following standards:

- Maximum allowable concentration of pollutants in gaseous emissions from industrial sources,
- Maximum allowable concentration of pollutants in municipal and liquid industrial effluents discharged to inland waters, sewage treatment and sea (three separate set of numbers).
- Maximum allowable emissions from motor vehicles.
- Ambient air quality standards.
- Drinking water standards
- Noise standards.

The above NEQS's are presented in **Tables A.1** to **A.6** below. Only a few of these standards will be applicable to the gaseous emissions and liquid effluents discharged to the environment from the activities under the proposed project.

Table A.1: Selected NEQS for Waste Effluents

Parameter	Unit	Standards (maximum allowable limit)
Temperature increase	°C	< 3
pH value (acidity/basicity)	pH	6-9
5-day biochemical oxygen demand (BOD) at 20 °C	mg/l	80
Chemical oxygen demand (COD)	mg/l	150
Total suspended solids	mg/l	200
Total dissolved solids	mg/l	3,500
Grease and oil	mg/l	10
Phenolic compounds (as phenol)	mg/l	0.1
Chloride (as Cl)	mg/l	1,000
Fluoride (as F)	mg/l	10
Sulfate (SO_4)	mg/l	600
Sulfide (S)	mg/l	1.0
Ammonia (NH_3)	mg/l	40
Cadmium	mg/l	0.1
Chromium (trivalent and hexavalent)	mg/l	1.0
Copper	mg/l	1.0
Lead	mg/l	0.5
Mercury	mg/l	0.01
Selenium	mg/l	0.5
Nickel	mg/l	1.0
Silver	mg/l	1.0
Total toxic metals	mg/l	2.0
Zinc	mg/l	5
Arsenic	mg/l	1.0
Barium	mg/l	1.5
Iron	mg/l	8.0
Manganese	mg/l	1.5
Boron	mg/l	6.0
Chlorine	mg/l	1.0

Notes:

1. The standard assumes that dilution of 1:10 on discharge is available. That is, for each cubic meter of treated effluent, the recipient water body should have 10 m^3 of water for dilution of this effluent.
2. Toxic metals include cadmium, chromium, copper, lead, mercury, selenium, nickel and silver. The effluent should meet the individual standards for these metals as well as the standard for total toxic metal concentration.

Source: Government of Pakistan (2000) (SRO 549 (I)/2000).

Table A.2: NEQS for Industrial Gaseous Emissions

mg/Nm^3 unless otherwise stated

Parameter	Source of Emission	Standards (maximum allowable limit)
Smoke	Smoke opacity not to exceed	40% or 2 Ringlemann Scale or equivalent smoke number
Particulate matter [1]	(a) Boilers and furnaces: i. Oil fired ii. Coal fired iii. Cement Kilns	 300 500 300
	(b) Grinding, crushing, clinker coolers and related processes, metallurgical processes, converters, blast furnaces and cupolas	500
Hydrogen Chloride	Any	400
Chlorine	Any	150
Hydrogen fluoride	Any	150
Hydrogen sulphide	Any	10
Sulphur Oxides [2, 3]	Sulfuric acid/Sulphonic acid plants	5,000
	Other Plants except power Plants operating on oil and coal	1,700
Carbon Monoxide	Any	800
Lead	Any	50
Mercury	Any	10
Cadmium	Any	20
Arsenic	Any	20
Copper	Any	50
Antimony	Any	20
Zinc	Any	200
Oxides of Nitrogen [3]	Nitric acid manufacturing unit	3,000
	Other plants except power plants operating on oil or coal: i. Gas fired ii. Oil fired iii. Coal fired	 400 600 1,200

Explanations:

1. Based on the assumption that the size of the particulate is 10 micron or more.
2. Based on 1% sulphur content in fuel oil. Higher content of sulphur will cause standards to be pro-rated.
3. In respect of emissions of sulphur dioxide and nitrogen oxides, the power plants operating on oil and coal as fuel shall in addition to NEQS specified above, comply with the standards provided separately.

Source: Government of Pakistan (2000) (SRO 549 (I)/2000).

Table A.3: National Environmental Quality Standards for Ambient Air [19]

Pollutants	Time-weighted Average	Concentration in Ambient Air		Method of Measurement
		Effective from 1st July 2010	Effective from 1st January 2013	
Sulfur Dioxide (SO_2)	Annual Average*	80 µg/m^3	80 µg/m^3	Ultraviolet Fluorescence
	24 hours**	120 µg/m^3	120 µg/m^3	
Oxides of Nitrogen as (NO)	Annual Average*	40 µg/m^3	40 µg/m^3	Gas Phase Chemiluminescence
	24 hours**	40 µg/m^3	40 µg/m^3	
Oxides of Nitrogen as (NO_2)	Annual Average*	40 µg/m^3	40 µg/m^3	Gas Phase Chemiluminescence
	24 hours**	80 µg/m^3	80 µg/m^3	
Ozone (O_3)	1 hour	180 µg/m^3	130 µg/m^3	Non dispersive UV absorption
Suspended Particulate Matter (SPM)	Annual Average*	400 µg/m^3	360 µg/m^3	High Volume Sampling, (Average flow rate not less than1.1 m^3/minute).
	24 hours**	550 µg/m^3	500 µg/m^3	
Respirable Particulate Matter. PM_{10}	Annual Average*	200 µg/m^3	120 µg/m^3	β Ray absorption
	24 hours**	250 µg/m^3	150 µg/m^3	
Respirable Particulate Matter. $PM_{2.5}$	Annual Average*	25 µg/m^3	15 µg/m^3	β Ray absorption
	24 hours**	40 µg/m^3	35 µg/m^3	
	1 hour	25 µg/m^3	15 µg/m^3	
Lead (Pb)	Annual Average*	1.5 µg/m^3	1.0 µg/m^3	ASS Method after sampling using EPM 2000 or equivalent Filter paper
	24 hours**	2.0 µg/m^3	1.5 µg/m^3	
Carbon Monoxide (CO)	8 hours**	5 mg/m^3	5 mg/m^3	Non Dispersive Infra Red (NDIR)
	1 hour	10 mg/m^3	10 mg/m^3	

*Annual arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.

** 24 hourly /8 hourly values should be met 98% of the in a year. 2% of the time, it may exceed but not on two consecutive days.

Source: Government of Pakistan (2010) (SRO 1062 (I)/2010).

[19] Full text of the *Standards* is available at the Pak-EPA website: (http://www.environment.gov.pk/info.htm).

Table A.4: NEQS for Motor Vehicles Exhaust and Noise [20]

(i) For In-use Vehicles

	Parameter	Standard (Maximum Permissible Limit)	Measuring Method	Applicability
1	Smoke	40% or 2 on the Ringlemann Scale during engine acceleration mode.	To be compared with Ringlemann Chart at a distance 6 or more. r	Immediate effect
2	Carbon Monoxide	6%	Under idling conditions: Non-dispersive infrared detection through gas analyzer.	
3	Noise	85 db (A).	Sound meter at 7.5 meters from the source.	

(ii) For new Vehicles

Emission Standards for Diesel Vehicles

(a) For Passenger Cars and Light Commercial Vehicles (g/Km)

Type of Vehicle	Category/Class	Tiers	CO	HC+ NOx	PM	Measuring Method	Applicability
Passenger Cars	M 1: with reference mass (RW) upto 2500 kg. Cars with RW over 2500 kg to meet NI category standards.	Pak-II IDI	1.00	0.70	0.08	NEDC (ECE 15+ EUDCL)	i. All imported and local manufactured diesel vehicles with effect from 01-07-2012
		Pak-II DI	1.00	0.90	0.10		
Light Commercial Vehicles	NI-I (RW<1250 kg)	Pak-II IDI	1.00	0.70	0.08		
		Pak-II DI	1.00	0.90	0.10		
	NI-II (1250 kg< RW <1700 kg0	Pak-II IDI	1.25	1.00	0.12		
		Pak-II DI	1.25	1.30	0.14		
	NI-III (RW>1700 kg)	Pak-II IDI	1.50	1.20	0.17		
		Pak-II DI	1.50	1.60	0.20		

Parameter	Standard (maximum permissible limit)	Measuring Method
Noise	85 db (A)	Sound meter at 7.5 meters from the source.

[20] Full text of the NEQS is available at the Pak-EPA website: (http://www.environment.gov.pk/info.htm).

(b) For Heavy Duty Diesel Engines and Large Goods Vehicles (g/Kwh)

Type of Vehicle	Category / Class	Tiers	CO	HC	NOx	PM	Measuring Method	Applicability
Heavy Duty Diesel Engines	Trucks and Buses	Pak-II	4.0	1.1	7.0	0.15	ECE-R-49	All Imported and local manufactured diesel vehicles with the effect 1-7-2012
Large goods Vehicles	N2 (2000 and up	Pak-II	4.0	7.0	1.10	0.15	EDC	

Parameter	Standard (maximum permissible limit)	Measuring Method
Noise	85 db (A)	Sound meter at 7.5 meters from the source.

Emission Standards for Petrol Vehicles (g/km)

Type of Vehicle	Category / Class	Tiers	CO	HC+ NOx	Measuring Method	Applicability
Passenger	M 1: With reference mass (RW) upto 2500 kg. Cars with RW over 2500 kg. to meet N1 category standards	Pak-II	2.20	0.50	NEDC (ECE 15 + EUDCL)	All imported and new models* locally manufactured petrol vehicles with effect from 1st July, 2009**
Light Commercial Vehicles	N1-I (RW<1250 kg)	Pak-II	2.20	0.50		
	N1-II (1250 kg>RW <1700 kg)	Pak-II	4.00	0.65		
	N1-III (RW>1700 kg)	Pak-II	5.00	0.80		
Motor Rickshaws & motor Cycles	2.4 strokes <150 cc	Pak-II	5.50	1.50	ECER 40	
	2.4 strokes>150 cc	Pak-II	5.50	1.30		

Parameters	Standard (maximum permissible limit)	Measuring Method
Noise	85 db (A)	Sound meter at 7.5 meters from the source

Explanations:	
DI:	Direct Injection
IDI:	Indirect Injection
EUDCL:	Extra Urban Driving Cycle
NEDC:	New Urban Driving Cycle
M:	Vehicles designed and constructed for the carriage of passengers and comprising no more than eight seats in addition to the driver's seat
N:	Motorvehicles with at least four wheels designed and constructed for the carriage of goods.
*	New model means both model and engine type change
**	The existing models of petrol driven vehicles locally manufacturedwill immediately switch ever to Pak-II emission standards but not later than 30th June, 2012

Source: Government of Pakistan (2009) (SRO 72 (KE)/2009).

Table A.5: National Standards for Drinking Water Quality[21]

Properties/Parameters	Standard Values for Pakistan
Bacterial	
All water intended for drinking (e.Coli or Thermotolerant Coliform bacteria)	Must not be detectable in any 100 ml samples
Treated water entering the distribution system (E.Coli orthermotolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml samples
Treated water in the distribution system (E.Coli orthermo tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml samples In case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12- month period.
Physical	
Color	≤15 TCU
Taste	Non objectionable/Accept able
Odor	Non objectionable/Accept able
Turbidity	< 5 NTU
Total hardness as $CaCO_3$	< 500 mg/l
TDS	< 1000
pH	6.5 – 8.5
Chemical	
Essential Inorganic	***mg/Litre***
Aluminum (Al)	≤0.2
Antimony (Sb)	≤0.005 (P)
Arsenic (As)	≤ 0.05 (P)
Barium (Ba)	0.7
Boron (B)	0.3
Cadmium (Cd)	0.01
Chloride (Cl)	<250
Chromium (Cr)	≤0.05
Copper (Cu)	2
Toxic Inorganic	***mg/Litre***
Cyanide (Cn)	≤0.05
Fluoride (F)*	≤1.5
Lead (Pb)	≤0.05
Manganese (Mn)	≤ 0.5
Mercury (Hg)	≤0.001
Nickel (Ni)	≤0.02

[21] Full text of the Standards is available at the Pak-EPA website: (http://www.environment.gov.pk/info.htm).

Properties/Parameters	Standard Values for Pakistan
Nitrate (NO_3)*	≤50
Nitrite (NO_2)*	≤3 (P)
Selenium (Se)	0.01 (P)
Residual chlorine	0.2-0.5 at consumer end; 0.5-1.5 at source
Zinc (Zn)	5.0
Organic	
Pesticides mg/l	PSQCA No. 4639-2004, Page No. 4 Table No. 3 Serial No. 20- 58 may be consulted.**
Phenolic compound (as phenols) mg/l	WHO standards: ≤ 0.002
Polynuclear Aromatic hydrocarbon (as PAH) g/L	WHO standards: ≤ 0.01v(by GC/MS method)
Radioactive	
Alpha Emitters bq/L or pCi	0.1
Beta Emitters	1

* indicates priority health related inorganic constituents which need regular monitoring.

** PSQCA: Pakistan Standards Quality Control Authority.

Source: Government of Pakistan (2010) (SRO 1063(I)/2010).

Table A.6: National Environmental Quality Standards for Noise [22]

Limit in dB(A) Leq *

Category of Area/Zone	Effective from 1st July 2010		Effective from 1st July 2012	
	Day time	Night time	Day time	Night time
Residential area	65	50	55	45
Commercial area	70	60	65	55
Industrial area	80	75	75	65
Silence zone	55	45	50	45

Notes:

1. Day time hours: 6:00 a.m. to 10:00 p.m.
2. Night time hours: 10:00 p.m. to 6:00 a.m.
3. Silence zone::Zones that are declared as such by the competent authority. An area comprising not less than 100 m around the hospitals, educational institutions, and courts.
4. Mixed categories of areas may be declared as one of the four above-listed categories by the competent authority.

* dB(A) Leq: Time weighted average of the level of sound in decibels on Scale A which is relatable to human hearing.

Source: Government of Pakistan (2010) (SRO 1064(I)/2010).

[22] Full text of the Standards is available at the Pak-EPA website: (http://www.environment.gov.pk/info.htm).

Annex B. Environmental Screening Checklist

Number of Subproject:

Proposing Agency:

Subproject Location:

Subproject Objective:

Subproject description (describe here subproject components and their dimensions/quantum, construction and O&M activities, major construction material required with approximate quantities, and other pertinent details):

Environmental and social setting (describe here the key environmental and social features (land form, land use, water bodies, flora and fauna, settlements, roads, railway lines, any public buildings, schools, hospitals, graveyards, etc.) of the area where the subproject would be implemented:

Estimated Cost:

Proposed Date of Commencement of Work:

Technical Drawing/Specifications Reviewed (circle answer): Yes __ No __

I. Subproject Related Issues

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant/ Large	Mitigation Measures	Residual Impacts/Notes
A.	**Zoning and Land Use Planning**						
1	Will the subproject affect land use zoning and planning or conflict with prevalent land use patterns?						
2	Will the subproject involve significant land disturbance or site clearance?						
3	Will the subproject land be subject to potential encroachment by urban or industrial use or located in an area intended for urban or industrial development?						
B	Utilities and Facilities						
4	Will the subproject require the setting up of ancillary facilities?						
5	Will the subproject make significant demands on utilities and services?						
6	Will the subproject require significant levels of accommodation or service amenities to support the workforce during construction (e.g., contractor will need more than 20 workers)?						
C	Water and Soil Contamination						

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant/ Large	Mitigation Measures	Residual Impacts/Notes
7	Will the subproject require large amounts of raw materials or construction materials?						
8	Will the subproject generate large amounts of residual wastes, construction material waste or cause soil erosion?						
9	Will the subproject result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?						
10	Will the subproject lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals (e.g., calcium chloride) for dust control?						
11	Will the subproject lead to an increase in suspended sediments in streams affected by road cut erosion, decline in water quality and increased sedimentation downstream?						
12	Will the subproject involve the use of chemicals or solvents?						
13	Will the subproject lead to the destruction of vegetation and soil in the right-of-way, borrow pits,						

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant/ Large	Mitigation Measures	Residual Impacts/Notes
	waste dumps, and equipment yards?						
14	Will the subproject lead to the creation of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors?						
D.	**Noise and Air Pollution Hazardous Substances**						
15	Will the subproject increase the levels of harmful air emissions?						
16	Will the subproject increase ambient noise levels?						
17	Will the subproject involve the storage, handling or transport of hazardous substances?						
E.	**Fauna and Flora**						
18	Will the subproject involve the disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes)?						
19	Will the subproject lead to the destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development?						

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant/ Large	Mitigation Measures	Residual Impacts/Notes
20	Will the subproject lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise-related problems?						
F.	**Destruction/Disruption of Land and Vegetation**						
21	Will the subproject lead to unplanned use of the infrastructure being developed?						
22	Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?						
23	Will the subproject lead to the interruption of subsoil and overland drainage patterns (in areas of cuts and fills)?						
24	Will the subproject lead to landslides, slumps, slips and other mass movements in road cuts?						
25.	Will the subproject lead to erosion of lands receiving concentrated outflow carried by covered or open drains?						

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant/ Large	Mitigation Measures	Residual Impacts/Notes
26	Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?						
27	Will the subproject lead to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles?						
G.	**Cultural Property**						
28	Will the subproject have an impact on archaeological or historical sites, including historic urban areas?						
29	Will the subproject have an impact on religious monuments, structures and/or cemeteries?						
30	Have Chance Finds procedures been prepared for use in the subproject?						
H.	**Expropriation and Social Disturbance**						
31	Will the subproject involve land expropriation or demolition of existing structures?						
32	Will the subproject lead to induced settlements by workers and others causing social and economic disruption?						

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant/ Large	Mitigation Measures	Residual Impacts/Notes
33	Will the subproject lead to environmental and social disturbance by construction camps?						

II. Siting Related Issues

	Issues	Yes	No	Don't Know	Mitigation Measures	Residual Impacts/Notes
1	Does the subproject require land acquisition?					
2	Will the subproject negatively impact livelihoods [Note: Describe separately if YES]					
3	Is the sub project located on land with contested ownership?					
4	Is the sub project located in an area with security problems					
5	Is the sub projected located on land reclaimed from floods (the ownership here may be contested)					
6	Is the subproject located in an area with designated natural reserves?					
7	Is the subproject located in an area with unique natural features?					
8	Is the subproject located in an area with endangered or conservation-worthy ecosystems, fauna or flora?					

	Issues	Yes	No	Don't Know	Mitigation Measures	Residual Impacts/Notes
9	Is the subproject located in an area falling within 500 meters of national forests, protected areas, wilderness areas, wetlands, biodiversity, critical habitats, or sites of historical or cultural importance?					
10	Is the subproject located in an area which would create a barrier for the movement of conservation-worthy wildlife or livestock?					
11	Is the subproject located close to groundwater sources, surface water bodies, water courses or wetlands?					
12	Is the subproject located in an area with designated cultural properties such as archaeological, historical and/or religious sites?					
13	Is the subproject in an area with religious monuments, structures and/or cemeteries?					
14	Is the project located in an area from where people have been displaced?					
15	Is the project located in an area where IDPs are temporarily settled?					
16	Is the project in a politically sensitive area?					
17	Is the subproject in a polluted or contaminated area?					
18	Is the subproject located in an area of					

	Issues	Yes	No	Don't Know	Mitigation Measures	Residual Impacts/Notes
	high visual and landscape quality?					
19	Is the subproject located in an area susceptible to landslides or erosion?					
20	Is the subproject located in an area of seismic faults?					
21	Is the subproject located in a densely populated area?					
22	Is the subproject located on prime agricultural land?					
23	Is the subproject located in an area of tourist importance?					
24	Is the subproject located near a waste dump?					
25	Does the subproject have access to potable water?					
26	Is the subproject located far (1-2 kms) from accessible roads?					
27	Is the subproject located in an area with a wastewater network?					
28	Is the subproject located in the urban plan of the city?					
29	Is the subproject located outside the land use plan?					

Signed by Safeguard Focal Person: _____

Title: _____

Date: _____

Signed by Project Manager: Name: _____

Title: _____

Date: _____

FORMAT

SOCIAL SCREENING and RAP OF SUB-PROJECTS

Sub-project Title:

A. Sub-Project Description:

1. Give a brief introduction to the sub-project, its geographical location, components, objectives and benefits
2. Details about existing conditions of the facilities and proposed restoration or rehabilitation works with scope
3. Cadastral map of proposed sub-project area with clearly marked PID owned land.
4. Demarcation of PID land on ground with overlay of sub-project design area earmarking site and proposed activities in order to explain work
5. Explain, whether this is purely restoration/rehabilitation of existing facilities or will involve any new works6. Is this sub-project closely linked to any other on-going activity, not funded under DCRIP?
7. Will this sub-project involve any ancillary impact/ activity away from the work site?
8. Timeframe for starting and completion of sub-project

B. Justification of Sub-Project Design and Alternative Analysis:

1. Importance of the proposed sub-project and its activities, and why it should be taken up:
2. Scenario if the work is not taken up:
3. Scenario if there are any alternative designs options of sub-project to avoid or minimize social/resettlement and environment impacts
4. What kind of natural disasters this corridor is vulnerable to? (good if this can be answered)
5. How is the proposed work disaster resilient? (good to answer)

C. Corridor of Impact:

1. Where will the activity be taken up, what does it pass through: markets, residential areas, etc.
2. Brief socio-economic profile of the work site and impact area, beneficiary/affected communities: businesses, livelihoods;
3. Who will benefit and welcome the work? Who may oppose the proposed work and why?

D. Social Impact Screening Report:
(Kindly take into consideration answers to A-5 and A-6 while provide information below)

Probable Involuntary Resettlement Effects	Yes	No	Not Known	Details/Remarks
1. Will the sub-project include any construction works?				
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 and is in possession of PID?				
5. Is the site privately owned, will this be purchased or obtained through voluntary donation?				
6. If the parcel of land has to be acquired, is the actual plot size and ownership status known?				
7. Is land for material mobilization, storage, contractor's camp or transport for the civil works available within the PID/government owned land?				
8. Are there any non-titled people (not legal owners of land) who live/do business on the proposed site/land for civil works?				
9. Will there be loss or damage to agricultural lands (encroached or owned), standing crops, trees etc.?				
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.?				
Are any religious or ethnic minorities affected?				
13. Are any indigenous people affected?				
14. Whether the affected land/structure owners likely to lose less than 10% of their land/structure area (in case of legal ownership).				
15. If so, are these land / structure owners willing to voluntarily donate the required land for this sub-project?				

16. Is any temporary impact likely to occur?				

Part B: Social Impacts Information

1. Land Requirement for the sub-project:

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

2. Agricultural Land affected due to sub-project:

Details	Unit	Quantity (marla/kanal/acre)
Total Affected	Number	
Title Holders (legal land owners)	Number	
Non-Titleholders– Encroachers	Number	
Non-Titleholders– Squatters	Number	
Families losing Agricultural Land	Number	

3. Dwellings/houses affected due to sub-project:

Details	Unit	Quantity
Total Affected	Number	
Title Holders (legal owners)	Number	
Non-Titleholders– Encroachers	Number	
Non-Titleholders– Squatters	Number	
Families losing houses	Number	

4. Commercial properties affected due to sub-project:

Details	Unit	Quantity
Total Affected	Number	
Title Holders (legal land owners)	Number	
Non-Titleholders– Encroachers	Number	
Non-Titleholders– Squatters	Number	
Families losing commercial properties	Number	

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

Type	Unit	Quantity

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

Part C Result Outcome of Social Screening Exercise		
1	Social Impact Assessment Required	
2	No Social Impact Assessment Required	

Annex C. Methodology and Structure of Environmental and Social Management Plans

Suggested Methodology

The subproject-specific ESMPs will be prepared using the standard methodology, as briefly listed below.

- Scoping – studying the subproject details and preparing long list of potential issues and concerns
- Site survey and data collection – recording the key environmental and social aspects of the area, identifying any environmental/social hot spots or key concerns, carrying out consultations with the community.
- Screening – on the basis of the above, short listing the key concerns and potential impacts of the subproject on environment and people.
- Impact assessment – assessing the significance of each potential impact and identifying appropriate mitigation measures. Assessment of cumulative impacts of a cluster of subprojects.
- ESMP compilation – documenting the process and outcome of the study. The ESMP structure is discussed below.

Suggested ESMP Structure

The ESMP will follow the standard structure as given below.

- Introduction, including background, a brief description of the Project, an overview of the relevant legal and policy framework
- A simplified description of the subproject, including its layout and location, resource requirements, wastes to be generated, manpower requirement, a brief description of construction activities, and a brief description of operation and maintenance activities.
- Baseline description, primarily describing the proposed site and its immediate surrounding aided with maps, photographs and schematics, key environmental and social aspects/resources of the surroundings such as land form and land use, land ownership, water resources, settlements, any critical habitat or protected area, any cultural heritage sites or graveyards, any sensitive receptor such as schools and hospitals, access routes, and other relevant details.
- Stakeholder consultations, recording the key concerns and suggestions of the community regarding the subproject and its potential impacts, and a description of the way these concerns will be addressed.
- Impact assessment
- Mitigation plans, listing all the impacts, their mitigation measures, assigning responsibility of implementing these measures, and also assigning responsibility for monitoring. Also identifying cumulative impacts if applicable.
- Monitoring plan, describing the monitoring requirements, frequency, and responsibility of conducting the monitoring.

- Training plan, describing the training requirements, contents, frequency, training recipients, and responsibility of conducting these trainings.
- Documentation and reporting, describing the requirement, frequency, and responsibility of documentation and reporting.
- Grievance redress mechanism (GRM).
- ESMP implementation budget, providing the cost estimate of its implementation.

Annex D. TOR for Environment and Social Specialist

The Environment and Social Specialist will be responsible for the supervision of implementation of ESMF as well as the ESMPs and Checklists that would be prepared for the subprojects. The Environment and Social Specialist will supervise the contractors' teams to ensure that all environmental commitments are incorporated into the construction activities and work processes. Specifically, the Environment and Social Specialist's responsibilities will include:

- Implementation of all aspects of ESMF, including environmental screening and filling the screening checklists for each subproject to be undertaken under DCRIP
- Preparation of ESMPs and Checklists for subprojects
- Supervising and supporting contractors in achieving their responsibilities as outlined in the ESMF and subsequent ESMPs and Checklists;
- Carrying out frequent field visits and conduct monitoring for ESMF implementation.
- Identifying and preparing environmental induction and training materials;
- Conduct/manage ESMF trainings for the PIU personnel in accordance with the Training Plan given in ESMF
- Managing the GRM
- Responding to environmental incidents as required;
- Preparing quarterly progress reports for submission to World Bank and other stakeholders.

The Environment and Social Specialist will ensure that the project remains compliant to the following World Bank operational policies and guidelines:

- OP / BP 4.01 Environmental Assessment
- OP / BP 4.04 Natural Habitats
- OP 4.09 Pest Management
- OP 4.11 Physical Cultural Resources
- OP / BP 4.12 Involuntary Resettlement
- OP 4.10 Indigenous Peoples
- OP / BP 4.36 Forests
- OP / BP 4.37 Safety of Dams
- OP / BP 7.50 Projects on International Waterways
- OP / BP 7.60 Projects in Disputed Areas
- Bank's Policy on Access to Information
- WB EHS Guidelines
- The consultant will also make use of the Health, Safety, and Environmental Guidelines in his/her supervision tasks.

Qualification: The Specialist should be MSc/BSc in environmental sciences or engineering with five years of relevant experience. Working experience on WB project would be an asset.

Terms of Reference for Social Development Specialist (Safeguards)

Context

The main objective of the Environment and Social involving Social Development Specialist (safeguards) is to help the Bank's clients–PID-Punjab and P&D–AJK in implementing the social and environmental components over the project period. The specialists work will falls into the following areas: (i) ensuring compliance of the World Bank's projects with the Bank's environmental and social safeguard policies; (ii) assisting the Bank's work on social development, specifically focusing on sub-national governance and poverty work, community driven development, gender, conflict, social accountability and civil society engagement; and (iii) assisting the Bank's work on environmental management, specifically focusing on strengthening institutional capacity, improving environmental quality and the sustainable management of natural resources

Specific Tasks:

The specific tasks of the Social Development Specialist will include:

a. Supervise land acquisition and involuntary resettlement activities in projects under implementation;
b. Initiate and review terms of reference for the conduct of social assessments required to inform project preparation
c. Review of the ethnic minorities' development plan and supervision of its implementation
d. Assess the robustness of the consultation process required for the preparation and implementation of the resettlement action plan.
e. Provide basic orientation and training to counterpart agencies potentially involved in projects preparation and implementation.
f. Provide intensive on-site support to project implementation agencies (IAs) in preliminary resettlement studies or preparation of resettlement action plans
g. Review draft resettlement action plans
h. Assist in policy dialogue with project stakeholders at all levels of project implementation.
i. Participate in the review and clearance of project documents for compliance with the Bank's safeguards policies.
j. As a member of the ES Team in Pakistan the Social Safeguard Specialist may be requested to provide support on tasks related to social analysis, economic and sector work.

Selection Criteria:

a) Graduate degree in a relevant field such as sociology, anthropology, urban planning, or other social sciences.
b) A minimum of 5 years relevant operational experience and proven track record in working on projects covering a broad range of resettlement and social development issues.
c) Good understanding of the World Bank's operational policies, processes and procedures including its safeguard policies.

d) Ability to think strategically and conduct dialogue on social development policies and priorities, while maintaining a strong sense of realism with regard to in-country conditions and competing demands for resources.
e) Demonstrated capacity to undertake operational and analytical tasks, work in teams, coach junior staff, and share knowledge.
f) Track record of dealing effectively with external and internal clients.
g) Demonstrated ability to work independently with limited supervision on a wide range of social development activities, and achieving results with agreed upon objectives and deadlines.
h) Field experience highly desirable.
i) Strong client orientation with commitment to results on the ground.
j) Proven ability to work effectively in a matrix environment.
k) Strong English and Chinese communication skills, both written and oral.

Terms of Reference for Third Party Validation

The scope of services will include the following:

- A thorough review of the revised ESMF and ESMPs to assess their effectiveness.
- Review the implementation status of mitigation measures in the ESMF, ESMPs, and Checklists, and the related documentation including but not limited to the review of screening checklists and ESMPs, as envisaged in the ESMF. The consultant will need to assess how many interventions have complete documentation and how much of the documentation is accurate and reflective of facts on ground.
- Review the environmental and social monitoring regime as specified in the ESMF and ESMPs, review reports of monitoring carried out by PIUs, identify non-compliances/gaps, and recommend changes, to improve monitoring mechanisms, if any. This will include providing feedback to improve integration of ESMF in the overall project implementation.
- The consultant will review the mechanism for the preparation of quarterly progress reports and recommend changes, if any, for improving the quality and presentation of these reports.
- Review the training regime as specified in ESMF, review the trainings carried out thus far by PIUs, identify non-compliances/gaps, and recommend changes, if any. Assess usefulness and effectiveness of these trainings and recommend ways and means in consultation with POs to make training program more effective.
- Identify any outstanding environmental and/or social issues/impacts associated with the subprojects already implemented, and recommend mitigation measures/ corrective actions where required.
- Review the reports of all previous TPVs carried out for DCRIP, particularly progress against their conclusions and recommendations.
- Based on the above, formulate recommendations for effective implementation of ESMF, overall management of the environmental and social aspects associated with the interventions under DCRIP.

Annex E. Format for Quarterly Progress Report

A. Executive Summary

Key activities carried out during the reporting period; key issues resolved; key outstanding issues; plans for the next quarter. (Half to three-quarter page)

B. Introduction

Briefly introduce the project, QPR, and ESMF. Briefly describe the implementation status of various project components. Briefly provide an overview of the overall ESMF implementation as well as subproject-specific ESMPs and Checklists. Describe the institutional arrangements made in PIU for ESMF implementation. (one page max)

C. Mitigation Plan Implementation

For the reporting quarter, describe the mitigation plans/checklists implemented for the project activities, giving reference to the appropriate references from the ESMF and ESMPs. Describe the mechanism for this implementation (eg, inclusion in the Supervision Consultant's Scope, if such as Consultant is engaged). Use annex for details if required. Use a table per the sample below.

Project Activity/Subproject	Mitigation Plans/Checklist Used	Notes

D. ESMF/ ESMP Monitoring

Describe the monitoring activities carried out during the quarter. Describe the mechanism adopted for this purpose. Use annex for details if required. Use a table per the sample below.

Project Activity/Subproject	Monitoring carried by	Monitoring date	Documentation produced (eg, filled checklists)	Key Issues Observed	Actions Needed/Notes

E. ESMF/ESMP Trainings

Describe the trainings conducted during the quarter (Use annex for details if required). Use a table per the sample below.

Trainings carried by	Training date	Participants	Notes

F. Status of Grievances Received and Addressed

Describe the key grievances received and addressed during the reporting quarter. Use a table for this purpose.

Grievance Received	Grievance Date	Action taken	Action Date	Notes/Any outstanding issue

G. Status of Actions Agreed during the Previous WB Mission/Meeting (will be left blank for the first QPR)

Describe the implementation status of the actions agreed during the previous WB mission/meeting, using the following table:

Agreed Action	Agreed Date	Implementation Status	Notes (next action in case of non-implementation)

H. Key Outstanding Issues

Describe the key outstanding issues requiring actions by PIUs, WB, or any other agency. Recommend corrective action to resolve the issue (use a table as appropriate).

I. Action Plan for next Quarter

Use a table to list key tasks to be performed during the next quarter with target dates, responsibilities and any other relevant information (eg, resource requirement).

Task	Planned Date	Responsibility	Resource Requirements	Notes

J. Photographs

Insert some representative photographs taken during ESMF/ESMP monitoring, trainings, and others.

Quarterly Progress Reports (QPRs) on RAPs

The quarterly progress report on Resettlement action plan will highlight the progress made on

a) Social screening of sub-projects , conduct of socio-economic surveys and social economic analysis and documentation in terms Land Acquisition and Resettlement Plans,
b) Preparation of resettlement action plans (RAPs)
c) Submission of RAPs – Short Resettlement Plans (SRPs) and Due Diligence Reports (DDRs).
d) Number of subprojects cleared from Bank for implementation of RAPs
e) Progress made on land acquisition and shifting of utilities.
f) Graphic presentation on incremental development on all components of RFP.
g) Development towards GRM –no of grievances recorded , responded and resolved
h) No of stakeholders consultations held, zonal distribution, participation level and outcomes indicators.
i) Problems encountered or opportunities in Voluntary donations of land for infrastructure sub-projects
j) Status of various statuary clearances from various departments such as forest and railways and Environmental protection agencies.
k) Management of the social and environmental issues;
l) Key issues being faced during implementation of resettlement plans.
m) Status of compliance to various actions agreed during supervision missions and reviews
n) Other actions as emerged from the reports of construction supervision and other consultants including the Bank-hired consultants.

Format for Project Completion Report

A. Executive Summary

Overall summary of the project and ESMF implementation.

B. Introduction

Briefly introduce the project, Completion Report, and ESMF. Briefly describe the implementation status of various project components. Briefly provide an overview of the overall ESMF implementation as well as subproject-specific ESMPs and Checklists. Describe the institutional arrangements made in PIU for ESMF implementation.

C. Mitigation Plan Implementation

For the entire project duration, describe the mitigation plans/checklists implemented for the project activities, giving reference to the appropriate references from the ESMF and ESMPs. Describe the mechanism for this implementation (eg, inclusion in the Supervision Consultant's Scope, if such as Consultant is engaged). Use annex for details if required.

D. ESMF/ ESMP Monitoring

Describe the monitoring activities carried out during the project. Describe the mechanism adopted for this purpose. Use annex for details if required.

E. ESMF/ESMP Trainings

Describe the trainings conducted during the project (Use annex for details if required). Use a table per the sample below.

Trainings carried by	Training date	Participants	Notes

F. Status of Grievances Received and Addressed

Describe the key grievances received and addressed during the project. Use a table for this purpose.

Grievance Received	Grievance Date	Action taken	Action Date	Notes/Any outstanding issue

G. Status of Actions Agreed during the WB Missions/Meetings

Describe the implementation status of the actions agreed during the WB missions/meetings, using the following table:

Agreed Action	Agreed Date	Implementation Status	Notes (next action in case of non-implementation)

H. Key Outstanding Issues

Describe the key outstanding issues requiring actions by PIUs, WB, or any other agency. Recommend corrective action to resolve the issue (use a table as appropriate).

I. Photographs

Insert some representative photographs taken during ESMF/ESMP monitoring, trainings, and others.

Annex F. Safeguards Procedures for Inclusion in the Technical Specifications of Contracts

I. **General**

1. The Contractor and his employees shall adhere to the mitigation measures set down and take all other measures required by the Engineer to prevent harm, and to minimize the impact of his operations on the environment.

2. The Contractor shall not be permitted to unnecessarily strip clear the right of way. The Contractor shall only clear the minimum width for construction and diversion roads should not be constructed alongside the existing road.

3. Remedial actions which cannot be effectively carried out during construction should be carried out on completion of each Section of the road (earthworks, pavement and drainage) and before issuance of the Taking Over Certificate:

   (a) these sections should be landscaped and any necessary remedial works should be undertaken without delay, including grassing and reforestation;
   (b) water courses should be cleared of debris and drains and culverts checked for clear flow paths; and
   (c) borrow pits should be dressed as fish ponds, or drained and made safe, as agreed with the land owner.

4. The Contractor shall limit construction works to between 6 am and 7 pm if it is to be carried out in or near residential areas.

5. The Contractor shall avoid the use of heavy or noisy equipment in specified areas at night, or in sensitive areas such as near a hospital.

6. To prevent dust pollution during dry periods, the Contractor shall carry out regular watering of earth and gravel haul roads and shall cover material haulage trucks with tarpaulins to prevent spillage.

II. **Transport**

7. The Contractor shall use selected routes to the project site, as agreed with the Engineer, and appropriately sized vehicles suitable to the class of road, and shall restrict loads to prevent damage to roads and bridges used for transportation purposes.

8. The Contractor shall be held responsible for any damage caused to the roads and bridges due to the transportation of excessive loads, and shall be required to repair such damage to the approval of the Engineer.

9. The Contractor shall not use any vehicles, either on or off road with grossly excessive, exhaust or noise emissions. In any built up areas, noise mufflers shall be installed and maintained in good condition on all motorized equipment under the control of the Contractor.

10. Adequate traffic control measures shall be maintained by the Contractor throughout the duration of the Contract and such measures shall be subject to prior approval of the Engineer.

11. Contractor shall maximize the use of locally available vehicles- tractors and other material dumping equipment.

12. Contractor shall restrict loads to prevent damage to roads and bridges used for transportation purposes.

III. **Workforce**

13. The Contractor should whenever possible locally recruit the majority of the workforce and shall provide appropriate training as necessary.

14. The Contractor shall install and maintain a temporary septic tank system for any residential labor camp and without causing pollution of nearby watercourses.

15. The Contractor shall establish a method and system for storing and disposing of all solid wastes generated by the labor camp and/or base camp.
16. The Contractor shall not allow the use of fuel wood for cooking or heating in any labor camp or base camp and provide alternate facilities using other fuels.

17. The Contractor shall ensure that site offices, depots, asphalt plants and workshops are located in appropriate areas as approved by the Engineer and not within 500 meters of existing residential settlements and not within 1,000 meters for asphalt plants.

18. The Contractor shall ensure that site offices, depots and particularly storage areas for diesel fuel and bitumen and asphalt plants are not located within 500 meters of watercourses, and are operated so that no pollutants enter watercourses, either overland or through groundwater seepage, especially during periods of rain. This will require lubricants to be recycled and a ditch to be constructed around the area with an approved settling pond/oil trap at the outlet.

19. The contractor shall not use fuel wood as a means of heating during the processing or preparation of any materials forming part of the Works.

IV. **Quarries and Borrow Pits**

20. Operations of a new borrow area, on land, in a river, or in an existing area, shall be subject to prior approval of the Engineer, and the operation shall cease if so instructed by the Engineer. Borrow pits shall be prohibited where they might interfere with the natural or designed drainage patterns. River locations shall be prohibited if they might undermine or damage the river banks, or carry too much fine material downstream.

21. The Contractor shall ensure that all borrow pits used are left in a trim and tidy condition with stable side slopes, and are drained ensuring that no stagnant water bodies are created which could breed mosquitoes.

22. Rock or gravel taken from a river shall be far enough removed to limit the depth of material removed to one-tenth of the width of the river at any one location, and not to disrupt the river flow, or damage or undermine the river banks.

23. The location of crushing plants shall be subject to the approval of the Engineer, and not be close to environmentally sensitive areas or to existing residential settlements, and shall be operated with approved fitted dust control devices.

V. **Earthworks**

24. Earthworks shall be properly controlled, especially during the rainy season.

25. The Contractor shall maintain stable cut and fill slopes at all times and cause the least possible disturbance to areas outside the prescribed limits of the work.

26. The Contractor shall complete cut and fill operations to final cross-sections at any one location as soon as possible and preferably in one continuous operation to avoid partially completed earthworks, especially during the rainy season.

27. In order to protect any cut or fill slopes from erosion, in accordance with the drawings, cut off drains and toe-drains shall be provided at the top and bottom of slopes and be planted with grass or other plant cover. Cut off drains should be provided above high cuts to minimize water runoff and slope erosion.

28. Any excavated cut or unsuitable material shall be disposed of in designated tipping areas as agreed to by the Engineer.

29. Tips should not be located where they can cause future slides, interfere with agricultural land or any other properties, or cause soil from the dump to be washed into any watercourse. Drains may need to be dug within and around the tips, as directed by the Engineer.

VII. Disposal of Construction and Vehicle Waste

30. Debris generated due to the dismantling of the existing structures shall be suitably reused, to the extent feasible, in the proposed construction (e.g. as fill material for embankments). The disposal of remaining debris shall be carried out only at sites identified and approved by the project engineer. The contractor should ensure that these sites (a) are not located within designated forest areas; (b) do not impact natural drainage courses; and (c) do not impact endangered/rare flora. Under no circumstances shall the contractor dispose of any material in environmentally sensitive areas.

31. In the event any debris or silt from the sites is deposited on adjacent land, the Contractor shall immediately remove such, debris or silt and restore the affected area to its original state to the satisfaction of the Supervisor/Engineer.

32. Bentonite slurry or similar debris generated from pile driving or other construction activities shall be disposed off to avoid overflow into the surface water bodies or form mud puddles in the area.

33. All arrangements for transportation during construction including provision, maintenance, dismantling and clearing debris, where necessary, will be considered incidental to the work and should be planned and implemented by the contractor as approved and directed by the Engineer.

34. Vehicle/machinery and equipment operations, maintenance and refueling shall be carried out to avoid spillage of fuels and lubricants and ground contamination. An 'oil interceptor'' will be provided for wash down and refueling areas. Fuel storage shall be located in proper banded areas.

35. All spills and collected petroleum products shall be disposed off in accordance with standard environmental procedures/guidelines. Fuel storage and refilling areas shall be located at least 300m from all cross drainage structures and important water bodies or as directed by the Engineer.

VIII. HIV/AIDS Education

36. The Contractor shall ensure that detection screening of sexually transmitted diseases, especially with regard to HIV/AIDS, amongst laborers is actually carried out and will submit a certificate of compliance.

IX. Socio-Cultural and Religious Practices

37. The contractor shall not differentiate any worker on the basis of belief system, caste and ethnic identity.

38. The contractor shall respect and in any case will not cause any disrespect to the socio-cultural and religious places and practices of the workers as well as the local communities.

Annex G. Voluntary Land Donation

Both the PID-Punjab and P&D AJK will completely avoid land acquisition. Whenever there is additional land requirement, the IAs will interact with the land owners and facilitate voluntary donation of land required for taking up sub-projects under the project. This use of voluntary donation option will be limited to small strips of land along the flood embankments. Under no circumstances, shall the titleholder be subjected to any pressure, directly or indirectly, to part with the land. These actions are expected to minimize adverse impacts on the local population and help in project benefits reaching all sections of community. The DCRIP will ensure that the process of voluntary donation of land is meticulously documented to avoid confusions, misunderstandings, litigations, etc. at a later stage. A format for this purpose is enclosed in the appendices (Annex-3). Original copies of all documentation of voluntary donation of land will be kept with the Land Revenue Department in Punjab and Land Use Planning Department in AJK. Complete documentation along with a copy of the final document will be sent to PIU for records and for inspection at a later date. For land donation the following rule will apply:

- The Titleholder should not belong to the vulnerable sections.
  - households (with a valid proof), as per provincial poverty line for rural/urban areas;
  - households without a proof of the same and belonging to the following social categories
    - (i) Women headed households with women as sole earner
    - (ii) minority / Handicapped persons, and is subject to any of the following impacts;
      - Loses land holding,
      - Loses shelter and
      - Loses source of livelihood.
- The Titleholder should be holding more than the minimum prescribed land,
- The impacts must be minor. The voluntary donation should not be more than 10 percent of the area of that particular holding of the Titleholder in that category of land (dry, wet or commercial/ residential).
- This should not require any physical relocation of the Titleholder. The land donated should not be more than 1 acre in case of dry land, 0.5 acre in case of wet land and 0.25 acre in case of commercial/ residential.
- The land must be jointly identified by the Revenue Department / Project Affected Committee / PIU Representative or project authorities. However the project technical authorities should ensure that the land is appropriate for sub-project purposes and that the sub-project will not invite any adverse social, health, environment, safety, etc. related impacts by procuring this land.
- The land in question must be free of squatters, encroachers, or other claims or encumbrances.
- Buildings/structures on the land donated are not accepted as donation.
- Verification of the voluntary nature of land donations must be obtained from each of the persons donating land. This should be in the form of notarized witnessed statements.
- In case of any loss of income or physical displacement is envisaged, verification of voluntary acceptance of community devised migratory measures must be obtained from those expected to be adversely affected.
- The land title must be vested in the project/PID for public services and appropriate guarantees of public access to services must be given by the private Titleholder.

- The Titleholder donating land should be provided access on priority basis, subject to eligibility, to the Government housing/ poverty reduction/ livelihoods/ etc. programs operating in the area.
- The Titleholder donating land should made to understand that they will have equal access to the infrastructure built on the donated land like any other community member and that they cannot claim for any priority treatment.
- Grievance Redress Mechanism must be available.
- The donations and the process followed is documented, monitored and reflected in the monitoring reports.

FORMAT FOR VOLUNTARY DONATION OF LAND

(Voluntary Donation of Land on Rs. -----/- Stamp Paper)

1. This deed of voluntary donation is made and executed on …..... day of ….....……. between Mr. ….....S/o W/ Mr. ---------- ---------- AND the Government of Punjab through Punjab Irrigation Department to render public service (Rehabilitation /strengthening /construction of new Flood protection embankment (project Title and Location). Herein after called the "Recipient" which term denotes to "for and on behalf of Project Management Unit, Disaster and Climate Resilience Infrastructure Project (DCRIP) , Government of Punjab " on the other part and shall mean and include his successors –in office, nominees and assignees etc.
2. Whereas, the details of the Location of the, land are given below:

Location Details

Land record No	**Location /Village**
Tehsil/UC	**District**
Title Holder/ Details	
Name and Father/ Husband's Name CNIC No,	**Status: Title Holder**
Age: occupation: Residence:	**Gender:**
Schedule –Land Details/structure	

Land in Question

Area	**Location**
North Boundary	**East Boundary**
West Boundary	**South Boundary**

Note: Detailed Map to the scale is appended.

3. Whereas the Title Holder is presently using / holds the transferable right of the above mentioned piece of land in the village mentioned above. Whereas the encroacher does not hold any transferable rights of the above mentioned piece of land in the village mentioned above but has been a long standing encroacher, dependent on its usufruct hereditarily.
4. Whereas the Title Holder testifies that the land is free of encumbrances and not subject to other claims/ claimants.
5. Whereas the Title Holder hereby voluntarily surrenders the land/structure without any type of pressure, influence or coercion what so ever directly or indirectly and hereby surrender all his/her subsisting rights in the said land with free will and intention.

6. Whereas the Recipient shall construct and develop infrastructure facilities under the project DCRIP Punjab and take all possible precautions to avoid damage to adjacent land/structure/other assets.
7. Whereas both the parties agree that the infrastructure so constructed/developed shall be for the public purpose.

Signatories

Title holder		Tehsildar	
Name		Name	
NIC No		Official seal	
		Transfer registration No.	
Witnesses			
1. UC Nazim	Name		Signature
	CNIC		
2. Village Numberdar	Name		Signature
	CNIS		
3. PID Representative	Name		Signature
EXEN/SDO	CNIC		

Annex H. World Bank Group's EHS Guidelines

Guidelines provided separately.