

Punjab Rural Sustainable Water Supply & Sanitation Project (PRSWSSP)

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

ESMF

**Final
March 2021**



**LOCAL GOVERNMENT & COMMUNITY DEVELOPMENT DEPARTMENT
PUNJAB**

Contents

EXECUTIVE SUMMARY	ii
مختصر خلاصه.....	3
CHAPTER 1 INTRODUCTION	1
1.1. Background	1
1.2. Project Description.....	2
1.3. Environmental & Social Management Framework.....	3
1.4. Methodology	4
1.4.1. Situation Analysis	4
1.4.2. Sample Based Survey for baseline data collection	4
1.4.3. Data Analysis.....	4
1.4.4. Review of Legal Framework	4
1.4.5. Screening and Categorization of Sub-Projects.....	4
1.4.6. Stakeholders Consultation	4
1.4.7. Social and Environmental Impacts Analysis	5
1.4.8. Proposed Mitigation Measures	5
1.4.9. Resettlement Policy Framework.....	5
1.4.10. Structure of ESMF	5
CHAPTER 2: LEGAL AND INSTITUTIONAL FRAMEWORK REVIEW	6
2.1. Introduction	6
2.2. Policy & Regulatory Review of Environmental Aspects	6
2.2.1. National and Provincial Laws, Regulations, Procedures and Guidelines dealing the Environmental Aspects	6
2.3. Policy & Regulatory Review of Social Aspects.....	6
2.3.1. National and Provincial Policies.....	6
2.3.2. National and Provincial Laws, Regulations, Procedures and Guidelines	7
2.4. Relevance of Policy and Legal Framework with PRSWSSP	8
2.4.1. Environmental Aspects	8
2.4.2. Social Aspects.....	10
2.5. World Bank Operational Policies.....	14
2.6. World Bank Guidelines.....	16
CHAPTER 3.....	17
3.1. Background	17
3.2. Facilities under PRSWSSP Project	17
3.3. Project Components	26

3.3.1.	Component 1: Water Supply and Sanitation Infrastructure Development (US\$ 467.1 million)	26
3.3.2.	Component 2: Behavior Change and Capacity Development (US\$ 15.4 million)	31
3.3.3.	Component 3: Service delivery Improvement (US\$ 50 million)	33
3.3.4.	Component 4: Project Management and Monitoring (US\$ 14.4 million)	37
3.4	Project Cost and Timeframe	37
3.5	Implementation Arrangements	37
CHAPTER 4	EXISTING BASELINE CONDITIONS	38
4.1.	Methodology of Baseline Data Collection	39
4.2.	Baseline Conditions of PRSWSSP Tehsils/Districts collected by Secondary Data	39
4.2.1.	Physical Environment	39
4.2.1.1.	Topography	39
4.2.1.2.	Geology	43
4.2.1.3.	Climatic Condition	43
4.2.1.4.	Natural Hazards	45
4.2.1.5.	Soil Morphology	47
4.2.1.6.	Hydrology	48
4.2.1.7.	Surface Water Quality	49
4.2.1.8.	Waste Water	50
4.2.2.	Biological Environment	50
4.2.2.1.	Flora & Fuana	50
4.2.2.2.	Forest	50
4.2.2.3.	Protected Areas	51
4.2.3.	Socioeconomic Environment	52
4.2.3.1.	Administrative Profile	52
4.2.3.2.	Demographics	53
4.2.3.3.	Education	53
4.2.3.4.	Health Facilities	54
4.2.3.5.	List of Industries	54
4.2.3.6.	Gender-Based violence	54
4.2.3.7.	Cultural and Archeological Sites:	55
4.3.	An Overview of Baseline Data Collected as Primary Source	55
4.3.1.	Physical Environment	56
4.3.1.1.	Water Quality	57
4.3.1.2.	Availability of Fresh Water	57
4.3.1.3.	Conditions of Existing Sewerage System	58
4.3.2.	Biologocal Environment	58

4.3.2.1.	Flora.....	59
4.3.2.2.	Fauna.....	59
4.3.3.	Socioeconomic Environment.....	59
4.3.3.1.	Demography	59
4.3.3.2.	Household size.....	60
4.3.3.3.	No. of Household.....	61
4.3.3.4.	Type of Village Settlements.....	63
4.3.3.5.	Means of Livelihood.....	63
4.3.3.6.	Households Income.....	64
4.3.3.7.	Average land holdings	64
4.3.3.8.	Health and Diseases	65
4.3.3.9.	Conflicts Resolution	65
4.3.3.10.	Water related Conflicts	65
4.3.3.11.	Ethnic Groups.....	66
4.3.3.12.	Languages.....	66
CHAPTER 5	STAKEHOLDERS CONSULTATION	67
5.1	Objectives.....	67
5.2	Identification of Stakeholders	67
5.3	Consultation with Local Communities.....	67
5.4	Consultation with Government Departments.....	72
5.5	Consultation with NGOs	79
5.6	Stakeholders Consultation Framework during Implementation of PRSWSSP Interventions	79
CHAPTER 6	IMPACT ASSESSMENT AND RECOMMENDATIONS.....	83
6.1.	Positive Socio-economic and Environmental Impacts of PRSWSSP	83
6.2.	Expected Negative Socio-economic and Environmental Impacts of PRSWSSP.....	87
Chapter 7	ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK.....	89
7.1.	Environmental and Social Safeguards Processing Steps.....	89
	Implementation of environmental and social safeguards will follow the following procedures closely linking with activity planning, design and implementation steps.	89
7.2.	Subprojects Environmental and Social Screening.....	90
7.2.1.	Analysis of Alternatives.....	90
7.2.2.	Subprojects Siting and land issues (financed under PRSWSSP).....	91
7.2.3.	Environmental Screening and Categorization of Sub-Projects.....	91
7.2.4.	Integration of Environmental and Social Safeguards Management in Scheme Life Cycle	93
7.2.5.	Preparation of Subprojects.....	94
7.2.7.	Subprojects Implementation	95
7.2.9.	Third Party Monitoring Consultant.....	95

7.3.	Institutional Arrangements.....	96
7.4.	Environmental and Social Management and Monitoring Framework	102
7.5.	Environmental & Social Mitigation and Monitoring Plan for ESMF	147
7.6.	Monitoring Framework	153
7.7.	Training/Capacity Enhancement Framework.....	159
7.8.	Disclosure of Sub-Projects Information.....	165
7.8.1.	Reporting and Documentation	165
7.8.2.	Reporting& Documentation Framework	165
7.9.	Grievance Redress Mechanism (GRM)	167
7.9.1.	Overview and Scope	167
7.9.2.	Objectives of Grievance Redress Mechanism	167
7.9.3.	Communication & Awareness	167
7.9.4.	Records and Monitoring	168
7.9.5.	Proposed Institutional Mechanisms	168
7.9.6.	GRM Process Implementation.....	168
7.10.	Gender Framework.....	170
7.11.	Communication Framework.....	172
7.12.	ESMF Implementation Budget.....	178
CHAPTER 8	RESETTLEMENT POLICY FRAMEWORK	180
8.1	Voluntary Land Donation	180
8.1.1.	Voluntary Land Donation Protocol.....	180
8.1.2.	When VLD Is Applicable	180
8.1.3.	When VLD Is Not Applicable	181
8.1.4.	Process for Voluntary Donation.....	181
8.2	Purpose of Resettlement Policy Framework	183
8.3	World Bank Resettlement Policy	183
8.4	Criteria for Eligibility of APs.....	185
8.5	Compensation Eligibility and Entitlements for Affected Persons.....	185
8.5.1.	Eligibility Criteria	185
8.6	Cut-off Date	188
8.7	Abbreviated Resettlement Action Plan (ARAP).....	188
8.8	Consultation, Participation and Disclosure/ Access to Information.....	190
8.8.1.	Stakeholder Consultation.....	190
8.8.2.	Disclosure of Information Plan.....	191
8.8.3.	Institutional Arrangements and Implementation Mechanism	192
8.8.4.	Resettlement Budget and Financing	193

8.9	Monitoring and Reporting.....	194
-----	-------------------------------	-----

PRSWSSP

LIST OF TABLES

Table 1: Legal and Policy Framework for Environmental Aspects	8
Table 2: Legal and Policy Framework for Social Aspects.....	10
Table 3: PRSWSSP Districts.....	38
Table 4: An overview of topography and geographical characteristics of Project Districts	40
Table 5: Climatic Conditions of PRSWSSP Districts/Tehsils	43
Table 6: Disaster occurrence in Project Tehsils/Districts	45
Table 7: Seismic Zone wise classification of Project Tehsils	46
Table 8: Soil Type Tehsil Wise	48
Table 9: BOD Levels in five major rivers of Punjab	49
Table 10: Protected areas of Project Tehsils	52
Table 11: Literacy Ratio of Project Tehsils	53
Table 12: Distances of Village to Nearby Water Bodies	57
Table 13: Languages of Project Area	66
Table 14: Discussion and Findings of Community Consultation.....	68
Table 15: Stakeholders Consultation Framework	81
Table 16: PRSWSSP Sub-Projects Environmental Screening and Categorization	92
Table 17: Environmental/Social Assessment and Management Process	95
Table 18: Positions and Responsibilities under Proposed Implementation Framework.....	97
Table 19 : Environmental and Social Management and Monitoring Framework (Construction of networks of underground sewer lines, covered drains,	102
Table 20: Environmental and Social Management and Monitoring Framework (Improvement/Rehabilitation/Construction of Community Septic Tanks/Toilets)	112
Table 21 ESMMF Liquid Waste Management	118
Table 22: ESMMF Rehabilitation of Water Supply Distribution Network	127
Table 23: ESMMF Waste Management.....	135
Table 24: ESMF Mitigation and Monitoring Plan.....	147
Table 25: Monitoring Levels and Responsibility	153
Table 26: ESMF Monitoring Framework.....	155
Table 27: Framework for ESMF Trainings under PRSWSSP	162
Table 28: Training Aspects/Requirements for Various Groups of Participants.....	164
Table 29: Reporting Requirements under each component	165
Table 30: Stepwise Gender related issues and their mitigation measures	170
Table 31: Communication Framework.....	174
Table 32: ESMF Implementation Budget.....	178
Table 33: Entitlement Matrix	185
Table 34: Consultation Framework for RPF	191
Table 35: Land Acquisition and Resettlement (LAR) Process	193
Table 36: Key Informants	303

LIST OF FIGURES

Figure 1: Structure of ESMF	5
Figure 2: Schematic Layout of MVS Water Supply System Interconnects	19
Figure 3: Schematic Layout SVS Water Supply System Interconnects	20
Figure 4: Schematic Layout of Communal Water Supply System Interconnect	21
Figure 5: Schematic Layout of Skimming Well Configuration	22
Figure 6: Typical Low-Cost Rainwater Harvest Solution at the Household Level	23
Figure 7: Schematic for Options in Collection and Final Disposal of Sewage through Treatment	24
Figure 8: Schematic for Collection and Final Disposal of Sewage through Soakage-Well Solution ...	25
Figure 9: Project Implementation Arrangement and transition to post-project service delivery	37
Figure 10: Selected Villages for ESMF baseline study	38
Figure 11: Seismic Zoning of Pakistan	46
Figure 12: Soil Type in Punjab Province	48
Figure 13: Types of Forest in Punjab	51
Figure 14: Selected Villages for ESMF study	53
Figure 15: Institutional Arrangements for Implementation of ARAP/RAP	192

LIST OF GRAPHS

Graph 2: District Wise VAW cases	55
Graph 2: Child marriage in Punjab.....	55
Graph 3: Quality of water and groundwater Level	57
Graph 4: Existing Sewrage Arrangements.....	58
Graph 5: Household size	60
Graph 6: Number of Household	62
Graph 7: Settlement.....	63
Graph 8: Means of Livelihood	63
Graph 9: Household Income.....	64
Graph 10: Aveage Land holding	64
Graph 11: Local Level GRM	65
Graph 12: Conflicts related to water.....	65

List of Annexures

Annexure A:Water Assessment Tehsil Wise (8 Out Of 16).....	196
Annexure B: Canal System in Project Area	199
Annexure C:Result of Waste Water Tests in 8 Tehsils of Punjab	201
Annexure D: Flora & Fauna.....	204
Annexure E: Demographics of selected project tehsils according to 2017 Census.....	207
Annexure F: Education Data (Schools & Colleges)	208
Annexure G: Health Data (Hospitals, Dispensaries, RHCs, BHCs)	210
Annexure H: List of Industries.....	211
Annexure I:Cultural & Archeological Sites	213
Annexure J Questionnaire for Field Visit	215
Annexure K Villages Profile	216
Annexure L: Public Consultaion date & participants.....	305
Annexure M Photo Gallery	307
Annexure N Environmental & Social Screening Checklist.....	313
Annexure O: Chance Find Procedures	317
Annexure P: Comparision of Alternatives.....	319
Annexure Q: Format For Voluntary Donation Of Land	323
Annexure R: Involuntary Resettlement Screening Checklist	325
Annexure S: Template of Environmental and Social Management Plan (ESMP).....	328
Annexure T: Environmental & Social Monitoring Checklist	330
Annexure U: ESF/Safeguards Interim Note:COVIOD-19 Considerations in construction/civil works projects.....	335
Annexure V: Outline of ARAP	347

ABBREVIATIONS AND ACRONYMS

ARAP	Abbreviated Resettlement Action Plan
BOD	Board of Director
BoR	Board of Revenue
CCP	Climate Change Policy
CDA	Canal and Drainage Act
DPAC	District Price Assessment Committee
E&S	Environment & Social
ECA	Employment of Child Act,2016
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
ES	Environmental Specialists
ESM	Environmental and Social Management
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FO	Finance Officer
GBV	Gender Base Voilence
GIS	Geographic Information System
GoPunjab	Government of Punjab
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
GRS	Grievance Redress System
HH	House Hold
HSE	Health, Safety, and Environment
ID	Institutional Development
IEE	Initial Environmental Examination
ILO	International Labor Organization
LAA	Land Acquisition Act
LG	Local Government
LG&CDD	Local Government & Community Development Department
PEQs	Punjab Environmental Quality Standards
PRSWSSP	Punjab Rural Sustainable Water Supply & Sanitation Project
RPF	Resettlement Policy Framework
RS	Resettlement Specialist
SDU	Service Delivery Unit
SSS	Social Safeguards Specialist
VAW	Violence Against Women
VLD	Voluntary Land Donation

EXECUTIVE SUMMARY

Introduction

The Government of Punjab, through its “Local Government & Community Development Department (LG&CDD)” intends to implement “Punjab Rural Sustainable Water Supply and Sanitation Project (PRSWSP)” in 16 tehsils/districts of the province with the proposed assistance of the World Bank (WB). In line with the national/provincial as well as WB safeguard requirements; and to address potentially negative environmental and social impacts of the Project, the LG&CDD has conducted an environmental and social assessment of the proposed activities. As an outcome of this assessment, this Environmental and Social Management Framework (ESMF) has been prepared. ESMF will be applicable to all the schemes/sub-projects under the Project to make them environmentally sustainable and socially acceptable.

Project Area

In Punjab, target area is 2000 villages in 16 districts including: Khushab, Mianwali, Sargodha, Chakwal, Bhakkar, Pakpattan, Chiniot, Jhang, Rajanpur, Rahim Yar Khan, DG Khan, Lodhran, Bahawalpur, Muzaffargarh, Bahawalnagar and Multan.

Project Components

The Project has four components as briefly described below; and its Project Development Objective (PDO) is to “*Provide equitable and sustainable access to safely managed water and sanitation and reduce child stunting*”.

COMPONENT 1: Water Supply and Sanitation Infrastructure Development (US\$ 467.1 million)

Component 1 will fill the infrastructure gap in the existing traditional rural Water Supply and Sanitation (WSS) systems that underlies the low access to safely managed water and sanitation in rural Punjab.

Subcomponent 1.1: Sanitation Infrastructure Development (US\$ 310.1 million).

This subcomponent will focus on fecal sludge collection, transference, treatment and disposal.

- **Household Disposal of Fecal Waste** The study¹ on technology options recommended two options for household disposal of fecal waste of small settlements.
 - (a) Pour-flush toilets with two/three stage septic tanks:
 - (b) Pour-flush toilets with combined (multi-house) septic tanks:
- **Drainage network** Project will upgrade the sewage conveyance system for large settlements, through sub-surface closed conduits with manholes at an appropriate distance and junctions. Where an upgrade or installation of household toilets is required, beneficiary households are expected to undertake the investment themselves or through community support. For the extreme poor, the project will consider subsidizing part of the expense, if community support is not sufficient.
- **Existing open drains will be retained to serve communities for storm water drainage.**
- **Wastewater treatment** The study assessed the suitability and cost-effectiveness of the following options:
 - a) Anaerobic Baffled Reactor (ABR)
 - b) Bio-trickling filters

¹ As a part of project preparation, technology options study was undertaken to evaluate the appropriateness and cost-effectiveness of available options given the variation in village conditions in rural Punjab, including topography, groundwater salinity levels and distance to available water sources among others (PRWSSP PAD v March 04, 2021)

- c) Oxidation Ponds
- d) Swales with infiltration check dams
- **Sludge management arrangements will depend on the choice of treatment**
- **Final disposal or reuse:** Where the treated wastewater is disposed directly into water bodies, Provincial Environmental Quality Standards will be met. Where the treated wastewater is to be applied to land for agricultural production, and no local regulation exists, FAO/WHO/PEQS or other accredited quality standards will be met.
- **Non-sewage household wastewater:** Where existing household piping assembly allows, wastewater from non-toilet sources (grey water), such as kitchen, shower/bath, washbasins, etc. will bypass the septic tank (where these are at the household level) and join the underground drain after passing through a filter that removes solid kitchen/food waste. In the case of ABR and multi-household septic tanks, all household human waste and grey water will mix in the underground drain and flow to the centralized anaerobic treatment site.

Sub-component 1.2: Water Supply Infrastructure Development (US\$ 157 million).

The study on technology options and their feasibility informed the choice of technology for water abstraction, treatment, and conveyance.

The following options were evaluated by the study to be the most feasible

- (a) Skimming wells adjacent to main or branch canals:
- (b) Direct pumping of groundwater from unconfined aquifers

Potential options for villages (or settlements within villages) that don't qualify for options (a) or (b) include:

- (a) Skimming wells adjacent to irrigation watercourses:
- (b) Reverse Osmosis:

COMPONENT 2: Behavior Change and Capacity Development (US\$ 15.4 million)

This component will finance activities that facilitate and induce health protective behavior change and build community capacity to support WSS service delivery.

Subcomponent 2.1 Awareness raising and behavior change related to COVID-19 and safe WASH practices (US\$ 8.3 million)

The project will support COVID-19 mitigation measures in rural Punjab through a series of measures. The focus will be on: (i) actions that households and communities can take to ensure physical distancing and basic hygiene, (ii) small-scale infrastructure to directly promote good hygiene practice and (iii) enhance jobs for unskilled and semi-skilled labor. Proposed activities include:

- (a) Communication campaigns on social distancing and hygiene practices and the risks of COVID-19 and other infectious diseases.
- (b) Low-cost external entry way hand-washing stations in public areas to prevent spread of infection.
- (c) While the project infrastructure is under construction, the project will support, on an urgent basis, the widespread adoption of the point of use (POU) treatment of water with chlorination-which is effective at eliminating pathogens, including COVID-19.
- (d) Job creation within villages by using local labor for the construction of hand-washing stations and the monetization of community participatory tasks related to rainwater harvesting, backyard kitchen gardening, animal and solid waste management, water quality management, and sanitation and hygiene promotion in shared village spaces.

Subcomponent 2.3: Training and Capacity Building of Village-level Institutions (US\$ 7.2 M)

Trainings will target village-level institutions that have a defined role in water and sanitation service

provision. These will be complemented by household behavior change but are distinct, in that they will build the capacity of informal village level organizations to perform tasks that both complement and supplement the O&M responsibilities assigned to Service Delivery Units (SDU).² Areas for capacity building will include:

- (a) Solid waste collection and separation for composting, recycling and the safe conveyance of residual waste,
- (b) Animal waste management
- (c) Regular monitoring of fecal waste management infrastructure
- (d) Regular monitoring of water delivery infrastructure
- (e) Protocols for reporting issues to relevant Tehsil bodies and customer complaint management;
- (f) Coordination with and request support from the Tehsil SDU;
- (g) Community outreach and social awareness, with a focus on the engagement of women, in coordination with the Social Welfare Department and/or NGOs;
- (h) Data entry for MIS (Subcomponent 3.2)

COMPONENT 3: Service delivery Improvement (US\$ 50 million)

Subcomponent 3.1: Establishing institutions and building capacity for service delivery (US\$ 2.4 million)

The service delivery model of the project consists of three tiers: (i) a provincial SDU head office that has functions of both, the Project Implementation and Management Unit (PIMU) as the implementing body of the project and a public-owned section 42 company as the apex body of tehsil units that will become self-sustainable financially and remain a permanent institutional arrangement for O&M of rural water supply; (ii) Tehsil level units that are on frontlines of service delivery; and (iii) Community Caretakers and Operators (CCO) that may be part of Village Councils, Village Organizations, or just village residents.

Subcomponent 3.2: Solid Waste and Animal Waste Management (US\$ 43.9 million).

Promoting the safe handling of solid waste is an integral aspect of the design of this project. The project intends to improve solid waste management against the following objectives:

- Promote separation and safe disposal of solid waste
- Facilitate recycling of waste
- Prevent disposing of waste in water bodies

Subcomponent 3.3: Water Quality Monitoring (US\$ 3.8 million)

The project will support a transition in Punjab towards regular and frequent water quality monitoring in rural areas for both drinking water supply and wastewater.

COMPONENT 4: Project Management and Monitoring (US\$ 14.4 million)

Subcomponent 4.1: Project Monitoring through a customized Management Information System (US\$ 1.3 M)

² The training program may be reoriented to focus on Village Councils during the latter half of the project, if needed. Village Councils have been created under the Punjab Local Government Amendment Ordinance 2021. The implementation of this part of the Act/Ordinance—namely the holding of elections to Village Councils and the setup of a mechanism for transfer of public funds to them—is currently in its initial stages and is unlikely to make sufficient progress during the first two-three years of project implementation. The project team will assess the status of VCs during the project's MTR and, if they are functional by then, support their capacity building to enable them to execute their role in water supply, sanitation, wastewater management and solid waste management, as envisioned by the Act/Ordinance.

The project will develop and use a comprehensive IT based Management Information System (MIS) to track project implementation progress, WSS service delivery performance, the flow of public and donor funds earmarked for WASH and related financial management information, and outcome indicators.

Subcomponent 4.2: Strengthening of Project Implementation and Management Unit (PIMU) (US\$ 13 million)

The key implementation tier will be the Project implementation and management unit (PIMU), which will be associated with the Department of Local Government and Community Development (LG&CD) – the implementing agency - and led by a full-time Project Director.

Regulatory and Policy Requirements

This ESMF has been prepared to address the requirements defined in the national and provincial regulations and policies. **Punjab Environment Protection Act 2012** being as principal legislation of environmental protection in Punjab Province envisages protection, improvement, conservation and rehabilitation with the help of legal action against polluters and green awakening of communities. 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 Environment Quality Standards (NEQSS) or Punjab Environmental Quality Standards (PEQSS) specified by the Punjab Environment Protection Agency (PEPA) are prohibited under the Act. Section 11, 13, 14, 15, 16 and 17 of PEPA will be applicable on PRSWSSP interventions. It is expected that no sub-projects will fall under E-1 category as per requirements of Section 12 of PEPA, 2012 and or Schedule I and II of PEPA Review of IEE/EIA Regulations 2000.

In addition, the ESMF addresses the requirements detailed in the WB Operational Policies (OPs) addressing environmental and social aspects and considerations. PRSWSSP has been categorized as **Category B**. The World Bank's **Operation Policy 4.01 (OP 4.01)** requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making. The OP defines the EA process and various types of the EA instruments and PRSWSSP will comply with all the processes and procedures of this OP. The project activities however do not trigger other safeguard policies such as OP 4.04 for natural habitat, OP 4.36 for forestry, OP 4.09 for pest management, OP 4.37 for safety of dams, , OP 4.11 for Physical Cultural Resources, OP 4.10 for indigenous people, OP 7.60 for projects in disputed areas. **While OP 7.50 for projects in international waterways is triggered** as the project is situated in the Indus Basin and relies on the waters of the Indus basin aquifer and the Indus River, transboundary waterways. OP 4.12 for involuntary resettlement is also triggered for the subprojects where land acquisition will be required on a larger scale, anyhow, it is expected land acquisition on a small scale will be required for some of the subprojects interventions which will be acquired on voluntary basis through **Voluntary Land Donation (VLD) procedures of WB**. Other relevant policies and WB Guidelines e.g., labor influx guidance note (2016), **policy on access to information** and **Gender Based Violence (GBV)** and **IFC Guidelines on Environment, Health and Safety** and **COVID-19 Considerations in Construction / Civil Works Projects** (during pandemic) will also be applicable during execution of PRSWSSP proposed interventions funded by WB.

Baseline Data Collection

The ESMF presents baseline data (collected through primary & secondary sources) for physical environment including air, water, land, biological and socio-economic features including demographic characteristics, incidence of poverty, social services, and gender-based violence, in the Project Tehsils. For the collection of primary data, Reconnaissance Survey (RS) was carried out that was based upon Sample Based Survey (SBS) in 64 villages of 16 project districts/tehsils from Southern Punjab (Rajanpur, Rahim Yar Khan, Bahawalnagar, Bahawalpur, DG Khan, Lodhran, Multan, Muzaffargarh), Central Punjab (Bhakkar, Pakpattan, Jhang, Chinot) and Northern Punjab (Khushab, Mianwali,

Sargodha, Chakwal) to prepare the ESMF. Profile of each village is prepared portraying the existing social and environmental baseline conditions in project villages. The villages were selected to adequately cover the diversity of the project area (districts) and based on the characteristics such as groundwater quality, population density, uncultivated land, partially developed area, hilly area and near the water resource.

In **Southern Punjab**, the major problem observed was waterlogging and saline ground water which is responsible for various water borne diseases and issues related to crop productivity. Open defecation is also one of the major issues observed in the villages of Rojhan, Bahawalnagar and Bahawalpur. Due to unavailability of latrines, women are bound to defecate either in the fields or in the backyard of their houses which is an unhygienic and unhealthy practice resulting in severe health issues especially among pregnant women and infants. In **Central Punjab**, unsafe drinking water is the major issues and local communities are consuming contaminated water and similarly poor sanitation system is responsible for various health issues. Likewise, in **Northern Punjab**, access to safe drinking water is identifies as the major issue and it was pointed out by the local villagers during public consultation sessions.

Stakeholders Consultation

During preparation of ESMF, stakeholder consultations were carried out with key stakeholders including (i) **local communities** - of the selected villages who are direct beneficiaries of the project PRSWSSP; (ii) **community leaders, landlords, influential/religious people**- of selected villages who can help in mobilization of the community and smooth implementation of the project intervention; and (iii) **Government Organizations/Departments**- of 16 Project districts/tehsils who may play an important role in the strengthening of project activities. Accordingly, the information was collected through several meetings and discussions in case of line departments/ GoP; and through FGDs and key informants' interviews in case of communities.

The outcomes of the consultation remained positive; the stakeholders provided their suggestions in overall project designs, its implementation arrangements and on geographical coverage.

Local Communities were of the view that PRSWWP may help them in:

- overall betterment of the sanitation system of the villages ;
- improvement in quality of drinking water ;
- improved sanitation system and drinking water quality will improve the overall health and save them from many water borne diseases;
- introduction of a proper solid waste management system in the village;
- expected good yield of crops as contaminated water was affecting the quality and quantity of their crops; and
- sustainable livelihood opportunities

Consultation with the **influential groups, landlords and religious leaders** revealed that:

- land owners will facilitate in community owned land which will be donated by them for project interventions through VLD
- Influential groups/land owners were of the view that the project activities may be carried out after harvest period to avoid any inconvenience, over which they were assured that it will be avoided and made part of the Mitigation Plans of the relevant subprojects.

Consultation with relevant officers/officials of **Government Departments/Organizations** revealed that:

- PRSWSSP districts/tehsils carry different socio-economic conditions which needs area specific environmental management plans to implement socio-economic and environmental mitigation measures;
- Training and capacity-building of relevant Government Organizations must be made part of overall implementation processes and procedures of ESMF;
- community awareness and sensitization must be ensured throughout project from design to implementation phase
- waste management system should be designed along with awareness campaign to adopt the best solid waste management practices and treatment of waste water must be ensured before using it for irrigation purposes;
- lesson learnt from previous projects and ground realities must be incorporated in PRSWSP to achieve desirable targets; and
- Coordination amongst various stakeholders at all levels to enable knowledge-sharing, incorporation of lessons learnt and harmonization of project execution at the field level.

Officers/officials of Government Departments/Organizations were briefed that most of their concerns are already covered under the Project design/activities, however, their feedback will be duly considered while devising the processes and procedures for implementation of ESMF.

Impact Assessment

Overall, the Projects interventions will have positive impacts on environmental and social conditions, including the positive impacts on environmental, aesthetics and hygienic conditions of the villages through better access to sanitation and good quality drinking water. Further positive outcomes include: reduction in cost of health care, and in lost productivity and income due to illness as well as significant reductions in child stunting and associated lifetime cognitive and learning deficits among children, the treatment of fecal waste and the resulting removal of bacterial pathogens from water bodies and the environment, will also have downstream health and environmental benefits.

The potential negative environmental and social impacts of the Project may be identified as construction related localized and short-term impacts such as air and water pollution, noise generation, drainage and safety hazards, small scale land acquisition chance find shallow groundwater, especially septic tanks, etc. and these impacts require appropriate mitigation and management measures to reduce and minimize them. Health and safety issues are also anticipated during construction phase of project activities and related to COVID-19 pandemic. Most of these adverse impacts are however of lower scale, temporary; not widespread and reversible in nature. These adverse impacts can be mitigated through simple mitigation measures and better management practices as suggested in this ESMF; and by adopting/complying with the WB group EHS guidelines; and following COVID-19 SOPs/WHO guidelines.

Environmental and Social Management Framework

As the exact nature, type, size, and location of individual subprojects are not known at this stage, a framework approach has been used for environmental assessment and an Environmental and Social Management Framework (ESMF) has been prepared for PRSWSSP. Similarly, the subproject specific resettlement impacts are not known at this stage, hence Resettlement Policy Framework (RPF) has been proposed. During the project implementation, before execution of each subproject to be considered under PRSWSSP, environmental and social screening will be required which will categorize the relevant subproject and recommend the type of safeguard instruments that will need to be prepared before civil works commencement., All identified subprojects/schemes will be screened for environmental and social impacts using the environmental and social screening checklist. ESMF provides simple screening procedure for the type of safeguard instrument (VLD/ Resettlement

Checklist/ESMP or SMP as part of ESMP and ARAP/RAP) to be used before implementing a subproject/scheme. The screening criterion is based on the subproject nature, anticipated impacts and complexity of project design as described below.

ESMF Subproject Screening Procedure

- **E-1 category of sub-projects**- All those sub-projects having negative environmental impacts of severe nature (significant, widespread, irreversible and/or unprecedented will be categorized as E-1; though it is expected that no sub-projects will fall under E-1. *However, such type of subprojects will not be financed by WB under PRSWSSP.*
- **E-2 category of sub-projects**- All those subprojects having negative environmental impacts of moderate nature will be categorized as E2 and for such projects, preparation & Submission of Environmental & Social Management Plan will be necessary
- **E-3 category of sub-projects**-All those subprojects having no or minimal negative impact on environment, will be categorized as E3 and for such subprojects, no further environmental assessment will be required, however, preparation and submission of E & Social Screening Checklist will be required and any minor impact if assessed through screening checklist will be mitigated accordingly.
- **S-1 category of sub-projects**-All those sub-projects having **200 or above affected persons**³ will be categorized as S-1 and for S-1 projects, preparation & Submission of a Resettlement Action Plan (RAP) will be mandatory. *However, such category of subprojects will not be financed by WB under PRSWSSP.* (In case of other social impacts if identified, Social Management Plan (SMP) will be prepared and made part of ESMP or ESIA).
- **S-2 category of sub-projects**-All those sub-projects having **less than 200 affected persons** will be categorized as S-2 and for S-2 category of sub-projects, preparation and submission of an Abbreviated Resettlement Action Plan (ARAP) will be mandatory (In case of other social impacts (if identified) Social Management Plan (SMP) will be made part of ESMP or ESIA).
- **S-3 category of subprojects**-All those sub-projects having no negative social impacts will be categorized as S-3 and for S-3 category of sub-projects, preparation and submission of E & Social Screening Checklist will be required and no further process of instruments preparation will be needed.

Institutional Arrangements

- ESMF has proposed a multi-tiered institutional arrangement for implementing safeguard requirements. At **LG&CDD** level, the Project Director (PD) **PIMU/SDU-HO** will be responsible for the overall implementation of ESMF as well as environmental and social performance of the Project. The project will hire a **dedicated Environmental Safeguards Specialist (ESS) & Social Safeguard Specialist (SSS)**. Safeguards Specialists will support the PD in all technical matters related to Environmental and Social Safeguards. ESS& SSS will also be responsible for maintaining an effective GRM, stakeholders' consultation, organization of training /capacity building programs, monitoring of ESMF compliance. A dedicated Gender Specialists will be hired at PIMU level to handle the gender-related issues
- **Service Delivery Units (SDU) at the tehsil level (SDU-TO)** will be established for the efficient O&M of the interventions made under the project. The Head of each office will be overall responsible for implementation of ESMF and environmental and social performance of the Project in his/her respective area.
- **At SDU-TO, Environmental/Water Quality Officers** will be deputed in each Tehsil and they will be responsible for social and environmental screening, ESMPs preparation and overall compliance of safeguards including training and field monitoring at respective Tehsil level under

³ .in terms of land acquisition and resettlement

the guidance/supervision of Environment Safeguards Specialist and Social Safeguards Specialist based at PIMU. ***Environmental/Water Quality Officers will prepare SMP & ESMP under the supervision of PIMU and consultant would be hired for preparation and submission of ARAP/RAP.***

- Tehsil councils at the Tehsil level will consider providing NOC to obtain license from the Punjab Water Resource Commission for SDU to work as service undertaker for the respective rural area of tehsil. Tehsil council will approve the increment in tariff for SDU and take periodic progress briefings, and
- Panchayats/Village Councils, apart from playing a crucial role in the implementation and O&M of the project & conduct consultations at subproject site levels and act as 1st tier of GRM; will also monitor and ensure that mitigation measures are properly addressed by the sub-project contractor.

ESMF Monitoring Mechanism

ESMF monitoring will be carried out to ensure that the safeguard documents and mitigation plans are regularly and effectively implemented. It will be carried out at three levels i.e. at the PIMU/SDU-HO level, at SDU-TO level and at project site level. ***Project Implementation & Management Unit (PIMU)*** also referred as Service Delivery Unit, Head Office (SDU-HO), would serve as the lead implementing entity to monitor all project related functions with the support of line departments and field offices. Similarly, ***SDU-TO*** will be responsible for monitoring their respective project areas with the technical support of PIMU. The project will develop appropriate Safeguards monitoring plan(s) for all levels indicating clear roles, responsibilities, parameters to be monitored and frequency of monitoring. The outcomes of such monitoring will be documented, shared with the management, field staff and beneficiary communities for course correction, if needed and for future reference. ***Panchayat/Village Councils*** will play monitoring role at specific subprojects' site level.

Third Party Validation (TPV) / Monitoring

In addition to the routine ESMF monitoring as described above, the project will hire an independent firm/consultant to carry out a sample-based Third-Party Validation (TPV) that will be conducted three times during the life of the project. The objective of this TPV will be to review the entire ESMF implementation process and its effectiveness. TPV will further identify any environmental and/or social issues caused by the project that may exist on ground and shall frame recommendations for course corrections for improving ESMF and its various components.

Capacity Building / Training

Local Government & Community Development Department (LG&CDD) does not have sufficient capacity at Tehsil level for the compliance of environmental and social safeguards, though its attached bodies/Companies have past experience of safeguards compliance of WB/ADB funded projects. Punjab Municipal Development Fund Company ⁴(an independent company under LG&CDD), has successfully ensured the compliance of social and environmental safeguards in a WB funded PMSIP⁵ and currently implementing Punjab Cities Program⁶ under LG&CDD while a PMU under LG&CDD is successfully implementing ADB funded PICIIP⁷ and compliance of environmental and social safeguards (as per ADB requirements) is key element of PICIIP. Anyhow, LG&CDD requires extensive capacity building/training and awareness raising programs at Tehsil and Panchayat/Village Council level in addition to hiring and maintaining a dedicated Environmental Specialist at PIMU level. To ensure the successful implementation of ESMF and compliance of the environmental and social mitigation

⁴ .PMDFC

⁵ .Punjab Municipal Improvement Service Project

⁶ .WB funded Program in 16 Municipal Committees/Corporations under PLGA 2019 system-ESMF implementation is a key component in meeting the DLIs Performance Measures and Minimum Access Conditions

⁷ .Punjab Intermediate Cities Improvement Investment Program-in 9 intermediate cities of Punjab

measures, strengthening capacity of relevant technical staff at PIMU, SDU-TO and beneficiary communities including Panchayat/Village Council is essential. This will be achieved through series of customized trainings and awareness sessions. Training/Capacity building will cover three key areas and include: (i) Environmental and social orientation/ awareness, (ii) ESMF Implementation; and (iii) Environmental and Social Management.

Reporting and Documentation

ESMF proposes a comprehensive and robust reporting mechanism enabling the project to monitor and document the Safeguards implementation progress while timely identifying any issue(s) for course correction. Key reporting and documentation requirements include: monthly/quarterly progress reports, field visit reports, filling of E&S checklists, SG Instruments records, training reports and TPV reports.

Grievance Redress Mechanism (GRM)

It is proposed to establish the following prior to commencing project implementation activities including pre-construction activities:

Teir 1: Panchayat/Village Council at village level –Village Councils made under Punjab Local Government (Amendment) Ordinance 2021 will act as the 1st tier of GRM at village community level

Teir 2: Tehsil Level-Public Complaints Center (PCC) in SDU-TO will be responsible to receive, log, and resolve complaints at site and in Village level. And a **Grievance Redress Committee (GRC-Tehsil Level)** in SDU-TO will be established for each district that will manage GRM aspects for all sub-project locations in each district including decisions to be taken, actions and monitoring of complaints resolution at sub-project level.

Teir 3: PIMU Level-GRC at PMIU (LG&CDD) will be responsible to oversee the overall functions of the GRM at a strategic level including monthly review.

ESMF Implementation Budget

ESMF implementation cost is estimated as PKR **Rs. 423,458,732/-**. This includes ESMF implementation staff (ESS, SSS & Gender Specialist at PIMU and 16 Environment/Water Quality Officers) salary, capacity building, training costs, and cost of TPV and preparation of ESMPs. The cost of mitigation measures will be included in the respective subproject cost.

Resettlement Policy Framework (RPF)

PRSWSSP will completely avoid private land acquisition by the community. Whenever there is additional land requirement (temporary or permanent) other than community donation and or on larger scale, the PIMU will follow the Resettlement Policy Framework (RPF).

For land acquisition, ARAP will be prepared for the rehabilitation of existing and construction of new schemes. The entitlement matrix included in the ESMF includes provisions according to the core principle related to land acquisition. The entitlement matrix covers different categories of losses. In addition to other necessary provisions, the ESMF also mandates those vulnerable squatters and non-titleholders will be entitled for cash compensation for affected portion of a structure at replacement value.

PRSWSSP

مختصر خلاصہ

خلاصہ

تعارف

حکومت پنجاب اپنے لوکل گورنمنٹ اینڈ کمیونٹی ڈیولپمنٹ ڈیپارٹمنٹ LG&CDD کے ذریعے ورلڈ بینک کی مجوزہ مدد سے صوبہ کے 16 اضلاع کی متعلقہ تحصیلوں میں ”پنجاب دیہی وائرسپلائی اینڈ سینیٹیشن پراجیکٹ“ (رورل سسٹین ایبل وائرسپلائی اینڈ سینیٹیشن پراجیکٹ) PRSWSSP کے اطلاق کا ارادہ رکھتی ہے۔ موجودہ پراجیکٹ کے تناظر میں ورلڈ بینک (قومی / صوبائی نیز عالمی بینک حفاظت کے تقاضوں کے مطابق اس منصوبے کے ممکنہ منفی ماحولیاتی اور سماجی اثرات کو رفع کرنے کے لئے LG&CDD نے مجوزہ سرگرمیوں کا ماحولیاتی اور سماجی جائزہ لیا ہے جس کے نتیجے میں یہ ماحولیاتی اور سماجی اقدام کا فریم ورک (ESMF) تیار کیا گیا ہے۔ اس منصوبے کو سماجی اور ماحولیاتی طور پر قابل قبول بنانے کے لئے اس فریم ورک کا اطلاق منصوبہ کی تمام سرگرمیوں اور ذیلی منصوبہ جات پر لاگو ہوگا۔

پروجیکٹ ایریا

صوبہ پنجاب کے 16 اضلاع خوشاب، میانوالی، سرگودھا، چکوال، بکھر، پاکپتن، جھنگ، راجن پور، رحیم یار خان، ڈی جی خان، لودھراں، بہاولپور، مظفر گڑھ، بہاولنگر اور ملتان کے 2000 دیہات شامل ہیں۔

پروجیکٹ کے حصے

اس منصوبے کے پاراہم حصے ہیں جیسا کہ ذیل میں مختصر آبیان کیا گیا ہے اور اس پراجیکٹ کا ڈیولپمنٹ مقصد ”محفوظ طریقے سے انتظام کردہ پانی کی فراہمی اور صفائی ستھرائی کے لئے مناسب اور پائیدار طریقہ کار تک رسائی اور بچوں میں نشوونما کی کمی کو رفع کرنا“۔

حصہ اول۔

1۔ فراہمی آب و صفائی کے بنیادی ڈھانچے کا فروغ (467.1 ملین امریکی ڈالر)

موجودہ روایتی دیہی وائرسپلائی اینڈ سینیٹیشن (WSS) سسٹم میں انفراسٹرکچر کے خلا کو پُر کر کے گامی پنجاب میں محفوظ طریقے سے انتظام کردہ پانی اور صفائی ستھرائی تک کم رسائی کو یقینی بناتا ہے۔

2۔ صفائی انفراسٹرکچر ڈیولپمنٹ (310.1 ملین امریکی ڈالر)

اس حصے میں انسانی فضلہ جات جمع کرنا محفوظ طریقے سے سلوک و منتقلی اور ٹھکانے لگانے پر توجہ دے گا۔

گھریلو سطح پر انسانی فضلہ کو ٹھکانے لگانا:

چھوٹی چھوٹی بستیوں میں انسانی فضلہ کو گھریلو سطح پر ٹھکانے لگانے کی خاطر ایک تحقیق نے دو اختیارات تجویز کیے ہیں۔

(a) فلیش ٹوائلٹ مع دو سے تین مرحلہ کی بینک

(b) فلیش ٹوائلٹ مع مشترکہ (ملٹی ہاؤس) سپیکٹ لٹیکوں والے فلیش ٹوائلٹ

تکاسی آب کانیٹ ورک:

پراجیکٹ ایک مناسب فاصلے اور جھنڈوں پر مین ہولز کے ساتھ ذیلی سطح کے بند نالوں کے ذریعے، بڑی بستیوں کے لئے سیوریج کی رسد کے نظام میں بہتری لائے گا جہاں پمپ گریو بیت الخلا کی بہتری یا تنصیب کی ضرورت ہوگی۔ مستفید کنندگان گھرانوں سے توقع کی جاتی ہے کہ وہ خود یا کمیونٹی کے تعاون سے سرمایہ کاری کریں۔ انتہائی غریبوں کے لئے اگر کمیونٹی کی مدد کافی نہیں ہے تو اس منصوبے میں اخراجات میں معاونت پر غور کیا جائے گا۔

بارش پانی کی نکاسی کے لئے موجودہ کھلی نالیوں کو برقرار رکھا جائے گا۔

گندے پانی کی صفائی:

تحقیق میں مندرجہ ذیل اختیارات کی مناسبت اور قیمت کا اندازہ کیا گیا ہے۔

(a) انیرو بک فیلڈری ایکٹر (ABR)

(b) ہائیڈروکلیک فیلڈری

(c) آکسیدیشن تالاب

(d) سویلر کے ساتھ انفلٹریشن چیک ڈیم

انسانی فضلات کو ٹھکانے لگانے کے انتظامات ٹریٹمنٹ کے انتخاب پر منحصر ہوں گے۔

حتمی ضیاع یا دوبارہ قابل استعمال بنانا:

جہاں صاف شدہ گندے پانی کو براہ راست ندی نالوں میں بہا دیا جاتا ہے وہاں صوبائی ماحولیاتی معیار کے تقاضے پورے ہوں گے۔ جہاں صاف کئے گئے گندے پانی کو زرعی پیداواری مقاصد کیلئے استعمال کیا جاتا ہے اس کے لئے کوئی مقامی ضابطہ موجود نہیں ہے، FAO/WHO/PEQS یا دوسرے تسلیم شدہ معیار کے تقاضوں کو پورا کیا جائے گا۔

عام گھریلو استعمال شدہ پانی کی نکاسی:

جہاں موجودہ عام گھریلو استعمال شدہ پانی کی نکاسی بذریعہ موجودہ پائپنگ اسبلی جو کہ نان ٹائلٹ اخراج پر منحصر نہیں ہے جیسا کہ باورچی خانہ، ٹاوڑا واش بین، وغیرہ کا اخراج۔ ایسا تمام پانی سپیکٹ ٹینک کو نظر انداز کرتے ہوئے ایک فیلڈری سے گزر کر کھلی نالی میں چلا جائے گا۔ جہاں فضلاتی اخراج کا پانی اور گرسے واٹر مکس ہو کر انیرو بک ٹریٹمنٹ سائٹ کی طرف چلا جائے گا۔

ذیلی جز 1.2: واٹر سپلائی انفراسٹرکچر ڈیولپمنٹ (157 ملین امریکی ڈالر)

پانی کی تجزیہ صفائی اور رسائی کو ٹیکنالوجی کے مختلف اختیارات کو بروئے کار اور موزوں بنانے کی خاطر ایک تحقیقی مطالعہ کا اجرا کیا گیا ہے۔ اس مطالعہ کے اختیارات مندرجہ ذیل ہیں۔

(a) مین براچ یا مہروں سے ملحق اسکیمنگ سٹواں

(b) غیر مصدقہ پائپوں سے زمینی پانی کی براہ راست پمپنگ

دیہات یا دیہات میں آبادیوں کے لئے ممکنہ اختیارات جو آچھر (a) یا (b) کے لئے اہل نہیں ہیں ان میں شامل ہیں:

(a) آب پاشی کے پانی سے ملحقہ کنوئیں

(b) ریورس اوسموس

2- حصہ دوم

طرز عمل میں تبدیلی اور اہلیت کی ترقی (15.4 ملین امریکی ڈالر)

یہ حصہ ایسی سرگرمیوں کی مالی اعانت فراہم کرے گا جو صحت کی حفاظت سے متعلق طرز عمل میں تبدیلی کو آسان بناتی ہیں اور WSS سروس کی فراہمی میں مدد کے لئے کمیونٹی یا سماج کی صلاحیت کو بڑھاتی ہیں۔

ذیلی جز 1.2:

CoVID-19 سے متعلق آگاہی طرز عمل کی تبدیلی اور محفوظ صحت مندانہ طرز عمل (8.3 ملین امریکی ڈالر)

- اس منصوبے کے تحت دیہی پنجاب میں کوویڈ 19 کے تخفیفی اقدامات کی حمایت کی جاسکتی ہے۔ ایسے اقدامات پر بھرپور توجہ مرکوز رکھی جائے گی جن کی بدولت دیہی کمیونٹی اور گھرانوں میں سماجی دوری اور بنیادی حفظان صحت کے طریقوں کو فروغ ملے گا۔
- حفظان صحت کے اچھے اصولوں کو فروغ دینے کے لئے چھوٹے انفراسٹرکچر منصوبہ جات۔
- غیر ہنرمند اور نیم ہنرمند مزدوروں کے لئے ملازمتوں میں اضافہ کی مجوزہ سرگرمیوں میں شمولیت۔
- (a) سماجی دوری اور حفظان صحت کے طریقوں اور کوویڈ 19 اور دیگر متعدی بیماریوں کے خطرات کے بارے میں آگاہی مہم۔
- (b) بیرونی واسطے کے راستوں پر ہاتھ دھونے والے پانی کے حماموں کی تنصیب۔
- (c) ہیڈاکہ منصوبے کے انفراسٹرکچر کی تعمیر جاری ہے، اس منصوبے کی ایک اہم بنیاد کو رہنمائی کے ذریعے پانی کی صفائی ہے اور اس طرز عمل کو وسیع پیمانے پر اپنانے میں مدد ملے گی، جو COVID-19 سمیت پیتھوجینز کے خاتمے میں بھی مؤثر ہے۔
- (d) ہاتھ دھونے والے ایندھن کی تعمیر کے لئے مقامی مزدوروں کو ملازمت کی فراہمی اور بارشی پانی کو ذخیرہ کرنے کے پیش نظر کمیونٹی کے شراکت داروں کے لئے روزگار کی تشکیل، گھریلو سطح پر سبزیات کی کاشت، جانوروں اور ٹھوس فضلات کا انتظام، گاؤں کی مشترکہ جگہوں پر صفائی ستھرائی اور حفظان صحت کو فروغ دینا۔

ذیلی جز 2.2 گاؤں کی سطح کے اداروں کی تربیت اور استعداد کاری (7.2 ملین امریکی ڈالر)

ٹینک اور استعداد کاری کے حصول کے لئے گاؤں کے ان اداروں کا انتخاب کیا جائے گا جو فراہمی و نکاسی آب میں کردار ادا کر رہے ہوں گے۔ ان کا اطلاق گھریلو سطح کی آگاہی مہم سے ہوگا لیکن جتنی حد ممکن اس آگاہی مہم سے مختلف ہوں گے اور گاؤں میں موجود خیر رکھی سطح کی تنظیموں میں صلاحیت پیدا کریں گے کہ وہ ایسے کام انجام دیں جو سروس ڈیپورٹی یونٹس کو تفویض کردہ آپریشنل مینجمنٹ کی اہم ذمہ داریوں کی تکمیل کو ممکن بنائیں۔

- ٹھوس فضلہ جات جمع کرنا اور کھاد بنانے، ری سائیکلنگ اور بچاؤ کوڑے دان کی محفوظ آمدورفت کیلئے طے کی
- (b) جانوروں کے فضلہ جات کا انتظام
- (c) انسانی فضلہ جات کے مینجمنٹ انفراسٹرکچر کی باقاعدہ نگرانی
- (d) پانی کی فراہمی کے بنیادی ڈھانچے کی باقاعدہ نگرانی

- (e) متعلقہ تحصیل کنسلوں اور صارفین کی شکایات کے انتظام کو معاملات کی اطلاع دینے کے پروڈوکول۔
- (f) تعاون اور تحصیل SDU سے تعاون کی درخواست؛
- (g) سماجی بہبود اور محکمہ سوشل ویلفیئر اور یا غیر سرکاری تنظیموں کے ساتھ ہم آہنگی کے ساتھ، خواتین کی شمولیت پر توجہ دینے کے ساتھ سوشل ویلفیئر اور دیگر این جی اوز تک رسائی۔
- (h) MIS کے ذریعے ڈیٹا انٹری

3۔ حصہ سوم

سروس کی فراہمی میں بہتری (50 ملین امریکی ڈالر)

ذیلی جز 1.3: خدمات کی فراہمی کے لئے اداروں کا قیام اور سروس ڈیلیوری کو بہتر بنانے کے لئے استعداد کاری (2.4 ملین امریکی ڈالر)

پروجیکٹ کا سروس ڈیلیوری ماڈل تین درجوں پر مشتمل ہے

- (i) صوبائی سطح پر ہیڈ آفس (SDU) جس کے دو بنیادی فرائض ہوں گے۔
- 1- عمل آوری اور انتظامی یونٹ (PIMU) جو کہ اس پراجیکٹ کے نفاذ کنندہ کے طور پر عمل کرے گا۔
- 2- ایک عوامی ملکیت سیکشن 42 کپنی جو کہ تحصیل یونٹوں کی نمائندہ تنظیم ہوگی۔ یہ تنظیم مالی طور پر مستحکم اور پائیدار ہوگی اور رورل وائرسپائی کی آپریشن مینجمنٹ کی مستقل طور پر جانچ پڑتال کرے گی۔
- (ii) تحصیل سطح کے وہ یونٹ جو خدمت کی فراہمی کے سلسلے میں ہیں۔
- (iii) کیوٹی گنہداشت کنندگان اور آپریٹرز (CCO) جو گاؤں کی کنسلوں، گاؤں کی تنظیموں یا صرف گاؤں کے رہائشیوں کا حصہ ہو سکتے ہیں۔

ذیلی جز 2.3: ٹھوس پکڑے کی عیحدگی اور محفوظ طریقے سے ٹھکانے لگانا۔ (43.9 ملین امریکی ڈالر)

- ٹھوس پکڑے کے محفوظ وینڈنگ کو فروغ دینا اس منصوبے کے ڈیزائن کا ایک لازمی پہلو ہے
- اس منصوبے کا ارادہ ہے کہ ٹھوس فضلہ جات کے انتظام کو درج ذیل مقاصد کے مقابلے میں بہتر بنایا جائے۔
- ٹھوس پکڑے کی عیحدگی کا فروغ اور ٹھوس فضلہ جات کا محفوظ طریقے سے ضیاع۔
- پکڑے کی ری سائیکلنگ میں سہولت۔
- پکڑے کو پانی کے ذخائر میں ٹھکانے لگانے سے اجتناب۔

ذیلی جز 3.3: پانی کے معیار کی نگرانی (3.8 ملین امریکی ڈالر)

یہ منصوبہ پنجاب کے دیہی علاقوں میں پینے کے صاف پانی کی فراہمی اور صحت سے پانی کے معیار کی جانچ پڑتال اور باقاعدہ نگرانی کرے گا۔

4۔ حصہ چہارم

پراجیکٹ مینجمنٹ اینڈ مانیٹرنگ (14.4 ملین امریکی ڈالر)

ذیلی جز 4.1: تخصیص کردہ انتظامی انفارمیشن سسٹم کے ذریعے پراجیکٹ کی مانیٹرنگ (1.3 ملین امریکی ڈالر)
یہ منصوبہ ایک جامع انفارمیشن ٹیکنالوجی اور MIS کو بروئے کار لاتے ہوئے منصوبہ پر عملدرآمد کی پیش رفت WSS سرورس کی فراہمی کی کارکردگی، واش اور متعلقہ مالی نظم و نسق کی معلومات اور نتائج کے اعشاریے کے لئے مختص عوامی اور ڈورڈوز کی فراہمی کو منظم انداز میں مانیٹر کرے گا۔

ذیلی جز 2.4: پراجیکٹ عمل آوری اور انتظامی یونٹ PIMU کا استحکام (13 ملین امریکی ڈالر)

PIMU اس منصوبہ کا ایک کلیدی عمل آوری اور بطور انتظامی یونٹ کام کرے گا۔ جس کا اطلاق محکمہ لوکل گورنمنٹ اور کمیونٹی ڈیولپمنٹ (LG&CDD) سے وابستہ ہوگا اور جس کی قیادت کل وقتی پراجیکٹ ڈائریکٹر کرے گا۔

ریگولیشنری اور پالیسی کے تقاضے

پنجاب انوائزمنٹ پروٹیکشن ایکٹ 2012، صوبہ پنجاب میں ماحولیاتی تحفظ کی غرض سے آلودگیوں کے خلاف قانونی کارروائی اور کیونٹیز میں ماحولیاتی تحفظ بڑھوتری اور بحالی کا تصور پیش کرتا ہے۔

یہ ایکٹ وسیع پیمانے پر مسائل پر لاگو ہونے کے ساتھ ساتھ معاشی و معاشرتی پہلوؤں، زمینوں کے حصول، ہوائی، مٹی، سمندری اور شوری کی آلودگی سے لے کر مضر فصلہ جات کے نبھانے تک محیط ہے۔

قومی ماحولیاتی ضوابط کے معیارات (NEQSS) یا پنجاب ماحولیاتی معیار کے نافذ کردہ حد سے زیادہ مقدار میں کسی بھی قسم کی آلودگی، فصلہ کا اخراج اس ایکٹ کے تحت ممنوع قرار پاتا ہے۔

PEPA کی دفعہ 11، 13، 14، 15، 16 اور 17 PRSWSSP منصوبہ کی مداخلتوں پر لاگو ہوگی۔ یہ توقع کی جاتی ہے کہ CAT PPA، 2012ء کے سیکشن 12 کے تقاضوں کے مطابق کوئی ذیلی منصوبہ E1 کیلیگری کے تحت نہیں آئے گا یا شیڈول اور EIA ریگولیشنز، 2000ء PEPA کا جائزہ۔

اس کے علاوہ (ESMF) ماحولیاتی اور معاشرتی پہلوں اور تحفظات کو حل کرنے کے لئے ورلڈ بینک آپریشن پالیسیاں (OPs) میں تفصیل سے ان تقاضوں پر توجہ دیتی ہیں۔ PRSWSSP کو ذمہ B کی درجہ بندی میں شامل کیا گیا ہے۔ ورلڈ بینک کی آپریشن پالیسی (او پی 4.01) کو بینک فنڈنگ کے لئے تجویز کردہ منصوبوں کی ماحولیاتی تشخیص (EA) کی ضرورت ہے تاکہ یہ یقینی بنایا جاسکے کہ وہ ماحولیاتی لحاظ سے مستحکم اور پائیدار ہوں گے اور فصلہ سازی کو بہتر بنائیں گے۔ آپریشن پالیسی EA مختلف قسم کے تشخیصی آلات کی وضاحت کرتا ہے۔ (PRSWSSP) اس OP میں درج تمام عمل اور وضع کردہ طریقہ کار کی تعمیل کرے گا۔ تاہم منصوبے کی سرگرمیاں دیگر حفاظتی پالیسیوں کو متحرک نہیں کریں گی۔ جیسا کہ (او پی 4.04) قدرتی ماحولیات (او پی 4.36) برائے جنگلات (او پی 4.09) برائے انتظام کیڑہ مکوڑہ جات (او پی 4.37) برائے ڈیموں کی حفاظت، (او پی 4.11) برائے ٹھوس ثقافتی اثاثہ جات، (او پی 4.10) مقامی

باشہ (7.60 اوپی) متنازع علاقوں میں منصوبوں کے لئے جبکہ (7.50 اوپی) بین الاقوامی آبی گزرگاہوں سے ملحقہ منصوبہ جات کے لئے متحرک کیا گیا ہے کیونکہ یہ منصوبہ دریائے سندھ طاس میں واقع ہے اور دریائے سندھ کے پانیوں اور سرحد پار آبی گزرگاہوں پر انحصار کرے گا۔ (4.12 اوپی) جو کہ غیر متحرک دوبارہ آبادی کاری پر لاگو ہوتا ہے جو کہ ان سب ذیلی منصوبہ جات پر عائد ہوگا جہاں بڑے پیمانے پر اراضی کے حصول کی ضرورت ہوگی۔ تاہم یہ متوقع ہے کہ اس پراجیکٹ میں زمین کا حصول چھوٹے پیمانے پر درکار ہوگا جو کہ ورلڈ بینک رضا کارانہ طور پر حاصل کرے گا۔

دیگر متعلقہ پالیسیاں اور ورلڈ بینک کارضا کاراندہ زمین عطیہ کرنے کا طریقہ کار:

دیگر متعلقہ پالیسیاں اور ورلڈ بینک کے رہنما خطوط جیسے ورلڈ بینک کے ذریعہ تیار کردہ PRSWSSP کے مجوزہ مداخلتوں پر عمل درآمد کے دوران بھی معلومات تک رسائی سے متعلق پالیسی اور ماحولیاتی صحت اور حفاظت اور ICF 19 پر تعمیرات اصول و کس پر آجیکٹس کے رہنما اصول وغیرہ بھی لاگو ہوں گے۔

بیس لائن ڈیٹا اکٹھا کرنا

ESMF نے متعلقہ تھیموں میں (بنیادی اور ثانوی ذرائع سے) معلومات اکٹھی کی ہیں جس میں آب و ہوا، پانی، زمین، حیاتیاتی اور معاشرتی و معاشی خصوصیات بشمول آبادیاتی خصوصیات، غربت، سماجی خدمات اور صحت جیسے اعداد و شمار کو اکٹھا کیا ہے۔ بنیادی اعداد و شمار کو جمع کرنے کے لئے، ریکورڈس سروس (RS) کیا گیا تھا جو جنوبی پنجاب کے اضلاع راجن پور، رحیم یار خان، بہاولنگر، بہاولپور، ڈی جی خان کی متعلقہ تھیموں کے 64 دیہاتوں میں نمونہ پر مبنی سروس پر محیط تھا۔ لو دھراں، ملتان، مظفر گڑھ، (SSMF) تیار کرنے کے لئے وسطی پنجاب (بھکر، پاکپتن، جھنگ، چنیوٹ (شمالی پنجاب) خوشاب، میانوالی، سرگودھا، چکوال کے منتخب دیہہ میں موجود سماجی اور ماحولیاتی خطوط پیش کرنے کے لئے ہر گاؤں کی الگ سے پروفائل بنائی گئی ہے۔ گاؤں کا انتخاب منصوبے کے رقبے (اضلاع) کے تنوع کی مناسبت کے طور پر کر کے لئے کیا گیا تھا اور ان خصوصیات کی بنیاد پر جو زمین پانی، معیار آبادی اور ثقافت، غیر آباد زمین، جزوی طور پر ترقی یافتہ علاقہ، پہاڑی علاقہ اور آبی وسائل سے قربت پر مبنی ہیں۔

جنوبی پنجاب میں سب سے بڑا مسئلہ سیم اور تھور کا تھا جو مختلف طرح کی بیماریوں اور فصلوں کی کم پیداوار کا باعث بن رہا تھا۔ رو جھان، بہاولنگر اور بہاولپور دیہاتوں میں کھلے عام رفع حاجت کرنا ایک اہم مسئلہ ہے۔ گھروں میں بیت الخلاء کی عدم دستیابی کی وجہ سے خواتین کھیتوں میں یا اپنے گھروں کے کچھواڑے میں رفع حاجت کرنے پر مجبور ہیں جو کہ غیر صحت بخش اور غیر صحت بخش عمل ہے جس کے نتیجے میں ان میں صحت کے شدید مسائل پیدا ہوتے ہیں خاص طور پر حاملہ خواتین اور نوزائیدہ بچوں کو صحت کی شدید پریشانی ہوتی ہے۔ وسطی پنجاب میں پینے کا غیر محفوظ پانی ایک اہم مسئلہ ہے۔ مقامی آبادیاں غیر محفوظ پانی استعمال کر رہی ہیں اس کے ساتھ ساتھ نظام صحت کی کارکردگی بھی تشویشناک ہے۔ اسی طرح شمالی پنجاب میں پینے کے صاف پانی تک رسائی ایک اہم مسئلہ قرار دیا گیا ہے اور مقامی دیہاتوں کی آبادیوں نے عوامی مشاورتی اجلاسوں کے دوران اس نقطہ نظر کی نشاندہی بھی کی ہے۔

اسٹیک ہولڈرز کی مشاورت

i) ESMF کی تیاری کے دوران اسٹیک ہولڈرز سے مشاورت کی گئی۔

ii) اس مشاورت میں مقامی کمیونٹی مقامی کمیونٹی کے ساتھ اس پراجیکٹ سے براہ راست مستفید کنندہ ہیں کی شمولیت کے ساتھ ساتھ مقامی قائدین

جاگیر دار، انڈیا، مذہبی شخصیات اور دیگر افراد جو اس منصوبہ کے نفاذ میں معاونت و مدد کر سکتے ہیں کو خصوصی طور پر شامل کیا گیا ہے۔

(iii) گورنمنٹ محکمہ جات اور 16 اضلاع کی منتخب تحصیلوں کی سرکاری تنظیمیں اچھے جو اس پراجیکٹ کی سرگرمیوں کو محفوظ بنانے میں اہم کردار ادا کر سکتے ہیں۔ اس ضمن میں مختلف محکموں / حکومتی اداروں کے افراد سے متحد میٹنگز و ملاقاتوں اور مباحثوں کے ذریعے یہ معلومات جمع کی گئی ہیں اور کمیونٹی کے معاملے میں یہی معلومات ایف جی ڈی اور گائیڈی مجسٹریٹس کے انٹرویو کی صورت میں اکٹھی کی گئیں۔

ان تمام مشاورات کے نتائج مثبت رہے۔ تمام اسٹیک ہولڈرز نے منصوبے کے مجموعی ڈیزائن، اس پر عمل درآمد کے انتظامات اور جغرافیائی کوریج پر اپنی تجاویز پیش کیں۔

لوکل کمیونٹیز کا خیال تھا کہ PRSWWP ذیل میں درج معاملات میں ان کی مدد کر سکتا ہے:

- 1- دیہاتوں کے صفائی کے نظام کی مجموعی طور پر بہتری۔
- 2- پینے کے پانی کے معیار میں بہتری۔
- 3- صفائی کے نظام میں بہتری اور پینے کے پانی کے معیار سے مجموعی صحت کی بہتری اور پانی سے پیدا ہونے والی متعدد بیماریوں سے بچاؤ۔

4- گاؤں میں ٹھوس پھرے کے انتظام کے مناسب نظام کا تعارف۔

5- متوقع فصلوں کی اچھی پیداوار کیونکہ آلودہ پانی ان کی فصلوں کے معیار اور مقدار کو متاثر کر رہا ہے اور

6- مستقل معاش کے مواقع

بااثر گروہوں، جاگیرداروں اور مذہبی رہنماؤں سے مشورے سے یہ بات سامنے آئی ہے کہ:

زمین کے مالکان گاؤں کی مشترکہ اراضی پراجیکٹ کے نام انتقال کرنے میں سہولت فراہم کریں گے جو رضا کارانہ طور پر VLD کے ذریعے منصوبہ کو عملیہ کی جائے گی۔

بااثر گروہوں / اراضی کے مالکان کا خیال تھا کہ فصل کی کٹائی کے بعد بغیر کسی تکلیف سے منصوبے کی سرگرمیاں انجام دی جاسکتی ہیں، انہیں اس بات کی یقین دہانی بھی کرائی گئی ہے کہ اس ضابطہ کو متعلقہ ذیلی منصوبہ جات کے تحقیقی پہلوؤں کا حصہ بنایا جائے گا۔

سرکاری محکموں / تنظیموں کے متعلقہ افسران / عہدیداروں سے مشاورت سے یہ بات سامنے آئی ہے کہ:

PRSWSSP کے مینجمنٹ اضلاع / تحصیلوں میں مختلف سماجی و معاشی حالات ہیں جس کی بناء پر ہر ضلع و تحصیل کے لئے مخصوص سماجی و معاشی اور ماحولیاتی حفاظتی تدابیر کی ضرورت ہوگی۔

متعلقہ سرکاری محکموں کی تربیت اور استعداد کاری کو ESMF کے مجموعی عمل درآمد اور طریقہ کار کا حصہ بنانا ضروری ہے۔

سماجی آگاہی کو پورے منصوبے یعنی ڈیزائن سے لے کر اس کے عمل آوری تک کے مراحل کا لازمی جزو بنانا ہوگا۔

آپاشی کے انتظام کے نظام کو آگاہی مہم کے ساتھ مشترکہ طور پر ڈیزائن کیا جانا چاہئے تاکہ ٹھوس فضلہ کے انتظام کے بہترین طریقہ کار کو اپنایا جاسکے اور آپاشی کے مقاصد کے لئے استعمال کرنے سے پہلے ٹھوس پانی کی صفائی کو ممکن بنایا جاسکے۔

PRSWSSP منصوبہ کے اہداف کے حصول کے لئے پچھلے منصوبہ جات اور زمینی حقائق سے حاصل شدہ اسباق کو منصوبہ میں شامل

کرنا ضروری ہے۔

علمی تاثیر کے حصول کو ممکن بنانے کی خاطر تمام شراکت داروں کی مشاورت اور اسباق کو فیلڈ لیول پر منصوبہ کی عملدرآمد میں شامل کرنے

کے لئے تمام شرائط داروں کے مابین مشاورتی عمل کو قابل استعمال لایا جانا ضروری ہے۔
سرکاری محکموں/تنظیموں کے افسران/عہدیداروں کو آگاہ کیا گیا کہ ان کے بیشتر خدشات پہلے ہی پراجیکٹ میں شامل کئے گئے ہیں تاہم ESMF کے نفاذ کے عمل اور طریقہ کار کی تشکیل کرتے وقت ان کے مزید خدشات / سفارشات کو ESMF کے عملدرآمد کے دوران از سر نو دیکھا جائے گا۔

اثرات کا جائزہ

مجموعی طور پر اس منصوبہ کی مداخلت سے ماحولیاتی اور سماجی حالات پر مثبت اثرات مرتب ہوں گے، بشمول حفظانِ صحت اور اچھے معیار کے پینے کے پانی تک بہتر رسائی کے ذریعے دیہاتوں کی ماحولیاتی، جمالیاتی اور افراد کی صحت سے متعلق رجحانات میں بہتری آئے گی۔ صحت کی دیکھ بھال کی لاگت میں کمی اور بیماری کی وجہ سے پیداواری صلاحیت کی کمی کے ساتھ ساتھ بچوں میں ذہنی و جسمانی نشوونما کی بڑھوتری میں بہتری آئے گی۔ انسانی فضلہ جات کے برتاؤ اور اس کے نتیجے میں جراثیم کو ختم کرنا۔ آبی ذخائر اور ماحول میں شامل خطرناک جراثیموں کو تلف کرنے سے انسانی اور ماحولیاتی صحت پر مثبت اثرات مرتب ہوں گے۔
اس منصوبہ کے ممکنہ منفی ماحولیاتی اور سماجی اثرات جو کہ محدود مدت کی ہوں گے جیسے کہ تعمیرات سے ملحقہ ہوا اور پانی کی آلودگی، شور کی آلودگی، نکاسی آب اور حفاظتی خطرات، چھوٹے پیمانے پر زمین کے حصول کے امکانات اور کم گہرے زمینی پانی خاص طور پر سپنک ٹینک وغیرہ۔ اور ان اثرات کو کم کرنے کے لئے مناسب تخفیفی اور انتظامی اقدامات کی ضرورت پیش آئے گی۔

صحت اور حفاظتی مسائل

یہ مسائل تعمیراتی کام کے دوران وقوع پذیر ہو سکتے ہیں جو کہ کووڈ 19 وبائی مرض سے مربوط ہیں۔ ان میں سے زیادہ تر منفی اثرات کم پیمانے پر اور عارضی ہو سکتے ہیں۔ ان اثرات کو کم کرنے کے لئے آسان حفاظتی اقدامات اور انتظامات بروئے کار لائے جاسکتے ہیں۔ جیسا کہ اس ESMF میں تجویز کیا گیا ہے اور ورلڈ بینک گروپ کے EHS رہنما اصولوں کو اپنانے یا WHO کی کووڈ 19 سے بچاؤ کے رہنما اصولوں کی تعمیر کر کے بچا جاسکتا ہے۔

ماحولیاتی اور سماجی انتظام کا فریم ورک

چونکہ اس مرحلے میں انفرادی ذیلی منصوبہ جات کی صحیح نوعیت، قسم، سائز اور مقام کا تعین نہیں ہے، جس کی بناء پر ماحولیاتی تشخیص کے لئے ایک فریم ورک اپدوچ کو استعمال میں لایا گیا ہے اور مجوزہ منصوبہ PRSWSSP کے لئے ایک ماحولیاتی اور سماجی انتظام کا فریم ورک ESMF تیار کیا گیا ہے۔ اسی طرح ذیلی منصوبہ جات کے دوبارہ آباد کاری کے اثرات چونکہ اس مرحلے میں معلوم نہیں ہیں لہذا آباد کاری پالیسی فریم ورک RPF تجویز کیا گیا ہے۔ منصوبہ کے نفاذ کے دوران ہر ذیلی منصوبہ جو کہ PRSWSSP کے زمرے میں کام کرے گا اس پر عملدرآمد سے قبل اس ذیلی منصوبہ کی ماحولیاتی اور سماجی جانچ پڑتال کی ضرورت ہوگی جو متعلقہ ذیلی منصوبہ کی درجہ بندی کرے گی اور حفاظتی انتظامات کی سفارشات تیار کرے گی جو تعمیراتی کام شروع ہونے سے پہلے کی ضرورت ہوگی۔

تمام شناخت کنندہ ذیلی منصوبہ جات کو ماحولیاتی اور سماجی مکریننگ چیک لسٹ کی بدولت جانچا جائے گا۔ ESMF ذیلی منصوبہ جات / سکیم کے نفاذ سے قبل ان کی جانچ پڑتال کا ایک آسان طریقہ کار حفاظتی ضابطوں کی قسم اور (VLD / Resettlement Checklist) یا SMP کے حصے کے طور پر ESMP یا SMP کی اسکریننگ کا آسان طریقہ فراہم کرتا ہے۔ اسکریننگ کا معیار ذیلی

منصوبہ جات کی نوعیت، متوقع اثرات اور منصوبے کے ڈیزائن کی پیچیدگی پر مبنی ہے۔ یہاں کہہ دیا کہ ذیل میں بیان کیا گیا ہے۔

ESMF ذیلی منصوبہ جات کی اسکریننگ کا طریقہ کار

ماحولیاتی درجہ بندی:

ذیلی منصوبہ E-1 زمرہ: ایسے تمام ذیلی منصوبہ جات جن کے اثرات شدید نوعیت کے ہوں گے (نمایاں وسیع، ناقابل تلافی وغیرہ) اس طرح کے تمام منصوبہ جات کو PRSWSSP کے تحت ورلڈ بینک کی مالی اعانت فراہم نہیں کی جائے گی۔

ذیلی منصوبہ E-2 زمرہ: ایسے تمام ذیلی منصوبہ جات جن کے قدرے کم منفی اثرات ہوں گے اس طرح کے منصوبوں کو E-2 کے زمرے میں شامل کیا جائے گا۔ ایسے تمام منصوبہ جات کے لئے ان کا ESMF پلان پیش کرنا لازمی ہوگا۔

منصوبہ E-3 زمرہ: ایسے تمام ذیلی منصوبہ جات جن کا ماحول پر معمولی یا بالکل بھی منفی اثر نہیں پڑتا ان کو E-3 کے زمرے میں شامل کیا جائے گا اور ایسے تمام منصوبہ جات کے لئے مزید ماحولیاتی تشخیص کی ضرورت نہیں درکار ہوگی اور اسکریننگ چیک لسٹ کے ذریعے اگر کوئی معمولی اثر پڑا تو اس کے مطابق تخفیف کی جائے گی۔

سماجی درجہ بندی:

ذیلی منصوبہ جات S-1 زمرہ: ایسے تمام منصوبہ جات جن میں حصول زمین کی ضرورت پیش آسکتی ہے ان کو S-1 زمرہ میں شامل کیا جائے گا اور ایسے منصوبہ جات کے لئے اگر VLD ناکافی ہو یا زمین کا حصول بڑے پیمانے پر ہو تو اس طرح کے منصوبے کے لئے ARP باب نمبر 8 میں دیئے گئے RPF کے مطابق تیار ہوں گے اور جہاں اراضی رضا کارانہ طور پر حاصل کی جائے گی وہاں VLD طریقہ کار اپنایا جائے گا جیسا کہ باب نمبر 8 میں دیا گیا ہے۔

ذیلی منصوبہ جات S-2 زمرہ: ایسے تمام ذیلی منصوبہ جات جہاں PRSWSSP پراجیکٹ کی مداخلتوں کے معمولی اثرات ذریعہ معاش پر مرتب ہو رہے ہوں (تعمیراتی کام کے دوران رکاوٹیں، دکانداروں یا ریڑھی بان طبقہ کی مادی نقل مکانی) جس کے لئے چھوٹے پیمانے پر معاوضے کی ضرورت ہو سکتی ہے ایسے تمام منصوبہ جات S-2 زمرہ میں آئیں گے اور ایسے تمام منصوبوں کے لئے سوشل مینجمنٹ پلان کی تیاری اور اس کو پیش کرنا ضروری ہوگا۔ SMP معاوضہ کے مختلف اخراجات RFP کے مطابق ESMP کا حصہ ہو سکتا ہے جہاں 40 سے زیادہ گھرانے ہوں۔ 40 سے زائد گھرانوں کے متاثر ہونے کی صورت میں ایئر یوٹیلٹی RAP کے ساتھ ایک علیحدہ SMP بھی تیار کیا جائے گا۔

ذیلی منصوبہ جات S-3 زمرہ: ایسے تمام ذیلی منصوبہ جات جن کا کوئی بھی منفی سماجی اثر نہیں ہوگا S-3 زمرے میں رکھا جائے گا اور ایسے تمام ذیلی منصوبہ جات کو مزید سماجی تشخیص کی ضرورت نہیں ہوگی۔

ادارہ جاتی انتظامات

ESMF نے حفاظتی ضروریات کو عملی جامہ پہنانے کے لئے کثیرالاجہتی ادارہ جاتی انتظام کی تجویز پیش کی ہے۔ LG&CDD لیول پر پراجیکٹ ڈائریکٹر (PD-PIM) مجموعی پر ESMF کے نفاذ کے ساتھ ساتھ منصوبہ کی ماحولیاتی اور سماجی کارکردگی کا بھی ذمہ دار ہوگا۔

اس منصوبہ میں ایک مختص ماحولیاتی حفاظتی ماہر (ESS) اور سوشل سیٹ گارڈیشن (SSS) کی خدمات حاصل ہوں گی۔ سیٹ گارڈز کے ماہر ماحولیاتی اور سماجی تحفظات سے متعلق تمام تکنیکی امور میں PD کی حمایت کریں گے۔ ESS اور SSS بھی ایک GRM اور منیک ہولڈرز کی مشاورت، تربیت / استعداد کاری کے پروگراموں کی تنظیم، ESMF کی تعمیل کی نگرانی کے لئے ذمہ دار ہوں گے۔ صنفی امور سے نبرد آزما ہونے کے لئے PIMU کی سطح پر ایک ہیڈ ریسیٹلٹ کی خدمات حاصل کی جائیں گی۔

سروس ڈیلیوری یونٹ SDU میں ہر تحصیل کی سطح پر ماحولیاتی / آبی معیار کی جانچ کے افسران تعینات کئے جائیں گے اور وہ سماجی اور ماحولیاتی مکرینک کے ذمہ دار ہوں گے۔ پروجیکٹ کے تحت کی جانے والی مداخلتوں کے مؤثر آپریشنل اینڈ مینجمنٹ کے لئے تحصیل سطح پر سروس ڈیلیوری یونٹ (SDU) تشکیل دی جائیں گی۔ ہر دفتر کا سربراہ اپنے علاقے میں ESMF اور ماحولیاتی اور سماجی کارکردگی کے نفاذ کے لئے پوری طرح ذمہ دار ہوگا۔

تحصیل سطح پر تحصیل کونسل تحصیل کے متعلقہ دیہی علاقوں کے لئے خدمت گزار کے طور پر کام کرنے کے لئے ایس ڈی یو کے لئے پنجاب واٹر ریسورس کمیشن سے لائسنس حاصل کرنے کے لئے این اوسی فراہم کرنے پر غور کریں گی۔ تحصیل کونسل SDU کے لئے محصولات میں اضافے کی منظوری دے گی اور وقتاً فوقتاً کارکردگی کا جائزہ لے گی اور پچھائیت گاؤں کی کونسلیں اس منصوبے کے عمل درآمد اور آپریشنل مینجمنٹ میں اہم کردار ادا کرنے کے علاوہ ذیلی منصوبہ جات کی سائٹ کی سطح پر مشاورت کریں گی اور GRM کے پہلے درجے کی حیثیت سے کام کریں۔ اس کی نگرانی اور اس بات کو بھی یقینی بنایا جائے گا کہ ذیلی منصوبہ جات کے تحقیقی اقدامات کو ٹھیکیداری کی مدد سے مناسب طریقے سے حل کیا جائے۔

ESMF جانچ پڑتال کا طریقہ کار

ESMF منصوبہ کی باقاعدہ جانچ پڑتال کی جائے گی تاکہ اس بات کا جائزہ لیا جاسکے کہ حفاظتی دستاویزات اور تحقیقی پلان باقاعدگی سے اور مؤثر طریقے سے نافذ کئے جائیں گے۔

اس کو تین سطحوں یعنی PIMU سطح پر SDU سطح پر اور پراجیکٹ سائٹ کی سطح پر انجام دیا جائے گا۔ پراجیکٹ پر عمل درآمد اور انتظامی یونٹ (PIMU) لائن ڈیپارٹمنٹ اور فیلڈ آفسز کے تعاون سے پراجیکٹ سے متعلق تمام کاموں کی نگرانی کرنے کے لئے ایک اہم عمل درآمدی ادارے کا کام کرے گا۔ اسی طرح SDU-PIMU کی تکنیکی مدد سے اپنے اپنے منصوبوں کے علاقوں کی نگرانی کے لئے ذمہ دار ہوگا۔ اس منصوبے میں تمام سطحوں کے لئے مناسب حفاظتی نگرانی کا پلان تیار کیا جائے گا جس میں واضح کردار، ذمہ داریاں، نگرانی کے لئے پیرامیٹرز اور مانیٹرنگ کی فریکوئنسی کی نشاندہی کی جائے گی۔ اس طرح کی مانیٹرنگ کے نتائج رپورٹ کیے جائیں گے، ان کو مینجمنٹ، فیلڈ ٹیم اور قائدہ کنندگان کیونٹیز کے ساتھ منصوبہ کی اصلاح کے لئے اگر ضرورت ہو تو اور آئندہ ریفورس کے لئے شیئر کیا جائے گا۔ پچھائیت / دیہی کونسلیں مخصوص منصوبوں کی سائٹ کی سطح پر نگرانی کا کردار ادا کریں گی۔

تیسری پارٹی کی توثیق

ہمیں کہنا چاہتے ہیں کہ ESMF نگرانی کے علاوہ اس منصوبہ میں ایک نمونہ پر مبنی تیسری پارٹی کی توثیق (TPV) انجام دینے کے لئے ایک آزاد فرم / مشیر کی خدمات حاصل کی جائیں گی جو اس منصوبہ کی تکمیل کے دوران تین بار کی جائے گی۔ اس TPV کا

اس منصوبہ میں ایک مختص ماحولیاتی حفاظتی ماہر (ESS) اور سوشل سیٹ گارڈیشن (SSS) کی خدمات حاصل ہوں گی۔ سیٹ گارڈز کے ماہر ماحولیاتی اور سماجی تحفظات سے متعلق تمام تکنیکی امور میں PD کی حمایت کریں گے۔ ESS اور SSS بھی ایک GRM اور مینجمنٹ ہولڈرز کی مشاورت، تربیت / استعداد کاری کے پروگراموں کی تنظیم، ESMF کی تعمیل کی نگرانی کے لئے ذمہ دار ہوں گے۔ صنفی امور سے نبرد آزما ہونے کے لئے PIMU کی سطح پر ایک مینجمنٹ سسٹم کی خدمات حاصل کی جائیں گی۔

سروس ڈیلیوری یونٹ SDU میں ہر تحصیل کی سطح پر ماحولیاتی / آبی معیار کی جانچ کے افسران تعینات کئے جائیں گے اور وہ سماجی اور ماحولیاتی مکرینک کے ذمہ دار ہوں گے۔ پروجیکٹ کے تحت کی جانے والی مداخلتوں کے مؤثر آپریشنل مینجمنٹ کے لئے تحصیل سطح پر سروس ڈیلیوری یونٹ (SDU) تشکیل دی جائیں گی۔ ہر دفتر کا سربراہ اپنے علاقے میں ESMF اور ماحولیاتی اور سماجی کارکردگی کے نفاذ کے لئے پوری طرح ذمہ دار ہوگا۔

تحصیل سطح پر تحصیل کونسل تحصیل کے متعلقہ دیہی علاقوں کے لئے خدمت گزار کے طور پر کام کرنے کے لئے ایس ڈی یو کے لئے پنجاب واٹر ریسورس کمیشن سے لائسنس حاصل کرنے کے لئے این اوسی فراہم کرنے پر غور کریں گی۔ تحصیل کونسل SDU کے لئے محصولات میں اضافے کی منظوری دے گی اور وقتاً فوقتاً کارکردگی کا جائزہ لے گی اور پچھائی گاؤں کی کونسلیں اس منصوبے کے عمل درآمد اور آپریشنل مینجمنٹ میں اہم کردار ادا کرنے کے علاوہ ذیلی منصوبہ جات کی سائٹ کی سطح پر مشاورت کریں گی اور GRM کے پہلے درجے کی حیثیت سے کام کریں۔ اس کی نگرانی اور اس بات کو بھی یقینی بنایا جائے گا کہ ذیلی منصوبہ جات کے تحقیقی اقدامات کو ٹھیکیداری کی مدد سے مناسب طریقے سے حل کیا جائے۔

ESMF جانچ پڑتال کا طریقہ کار

ESMF منصوبہ کی باقاعدہ جانچ پڑتال کی جائے گی تاکہ اس بات کا جائزہ لیا جاسکے کہ حفاظتی دستاویزات اور تحقیقی پلان باقاعدگی سے اور مؤثر طریقے سے نافذ کئے جائیں گے۔

اس کو تین سطحوں یعنی PIMU سطح پر SDU سطح پر اور پراجیکٹ سائٹ کی سطح پر انجام دیا جائے گا۔ پراجیکٹ پر عمل درآمد اور انتظامی یونٹ (PIMU) لائن ڈیپارٹمنٹ اور فیلڈ آفسز کے تعاون سے پراجیکٹ سے متعلق تمام کاموں کی نگرانی کرنے کے لئے ایک اہم عمل درآمدی ادارے کا کام کرے گا۔ اسی طرح SDU-PIMU کی تکنیکی مدد سے اپنے اپنے منصوبوں کے علاقوں کی نگرانی کے لئے ذمہ دار ہوگا۔ اس منصوبے میں تمام سطحوں کے لئے مناسب حفاظتی نگرانی کا پلان تیار کیا جائے گا جس میں واضح کردار، ذمہ داریاں، نگرانی کے لئے پیرامیٹرز اور مانیٹرنگ کی فریکوئنسی کی نشاندہی کی جائے گی۔ اس طرح کی مانیٹرنگ کے نتائج رپورٹ کیے جائیں گے، ان کو مینجمنٹ، فیلڈ سٹاف اور قائدہ کنندگان کیونٹریز کے ساتھ منصوبہ کی اصلاح کے لئے اگر ضرورت ہو تو اور آئندہ ریفورمز کے لئے شیئر کیا جائے گا۔ پچھائی / دیہی کونسلیں مخصوص منصوبوں کی سائٹ کی سطح پر نگرانی کا کردار ادا کریں گی۔

تیسری پارٹی کی توثیق

ہمیں کہنا چاہتے ہیں کہ ESMF نگرانی کے علاوہ، اس منصوبہ میں ایک نمونہ پر مبنی تیسری پارٹی کی توثیق (TPV) انجام دینے کے لئے ایک آزاد فرم / مشیر کی خدمات حاصل کی جائیں گی جو اس منصوبہ کی تکمیل کے دوران تین بار کی جائے گی۔ اس TPV کا

مقصد ESMF کے پورے عمل اور اس کی تاثیر کا جائزہ لینا ہوگا۔ TPV اس منصوبے کی وجہ سے کسی بھی ماحولیاتی یا سماجی مسائل کی نشاندہی کرے گی جو مبنی طور پر موجود ہو سکتا ہے اور ESMF اور اس کے مختلف اجزاء کو بہتر بنانے کے لئے نصاب کی اصلاحات کے لئے سفارشات مرتب کرے گی۔

استعداد کاری / تربیت

ماحولیاتی اور سماجی تحفظات کی تعمیل کے لئے تحصیل سطح پر محکمہ لوکل گورنمنٹ اور کمیونٹی ڈویلپمنٹ کے پاس منصوبہ کے ماحولیاتی اور تحقیقی عوامل اور جاننے کی استعداد نہیں ہے تاہم ان محکموں کے ساتھ وابستہ اداروں / کمپنیوں کو اسٹیشن ڈویلپمنٹ بینک اور ورلڈ بینک کے ماحولیاتی اور تحقیقی نقطہ نظر کا تجربہ موجود ہے۔ پنجاب میونسپل ڈویلپمنٹ فنڈ کمپنی (LG&CDD) کے تحت ایک آزاد کمپنی نے کامیابی کے ساتھ ایک WB فنڈ سے چلنے والے PMSIP میں سماجی اور ماحولیاتی تحفظات کی تعمیل کو یقینی بنایا ہے اور اس وقت LG&CDD کے تحت پنجاب کے مختلف شہروں کے پروگرام پر عمل درآمد کیا جا رہا ہے جبکہ LG&CDD کے تحت ایک PMU کامیابی کے ساتھ ADB کی مالی اعانت سے چلنے والے PICIIP کو نافذ کر رہا ہے۔ ADB ماحولیاتی اور سماجی تحفظات کی ضروریات کے مطابق PICIIP کا بنیادی عنصر ہے۔ کسی بھی طرح LG&CDD کو PIMU کی سطح پر ایک مخصوص ماحولیاتی ماہر کی خدمات حاصل کرنے اور برقرار رکھنے کے علاوہ تحصیل اور پچائیت / دیہی کونسل کی سطح پر صلاحیتوں کی تعمیر / تربیت اور شعور بیدار کرنے کے پروگراموں کی ضرورت ہے تاکہ ESMF کے کامیاب نفاذ کو یقینی بنایا جاسکے اور ماحولیاتی اور سماجی تحفیف کی تعمیل کی جاسکے۔ اقدامات، PIMU اور SDU-2 میں متعلقہ محکمہ کی عملے اور پچائیت / دیہی کونسل سمیت کمیونٹی کے مستفید شراکین کی صلاحیت کو مستحکم کرنا ضروری ہے۔ یہ سلسلہ وار اپنی مرضی کے مطابق تربیت اور آگاہی سیشن کے ذریعہ حاصل کیا جائے گا۔ تربیت / اہلیت کی عمارت میں تین اہم شعبوں کا احاطہ کیا جائے گا جس میں (i) ماحولیاتی اور سماجی رجحان / بیداری، (ii) ESMF عمل آوری (iii) ماحولیاتی اور سماجی انتظامات شامل ہیں۔

رپورٹنگ اور دستاویزات

ESMF نے ایک جامع اور مضبوط رپورٹنگ کے طریقہ کار کی تجویز پیش کی ہے جس سے منصوبے کے حفاظتی اقدامات پر عمل درآمد کی پیشرفت کی نگرانی اور رپورٹنگ کی جاسکے گی جبکہ کسی بھی مسئلے کی بروقت نشاندہی کی جاسکے گی۔ کلیدی رپورٹنگ اور دستاویزات کی ضروریات میں ماہانہ / سہ ماہی ترقیاتی رپورٹیں، فیلڈ وزٹ رپورٹیں، E&S چیک لسٹوں کو بھرنا، SG انشرومنٹ ریکارڈز، تربیت کی رپورٹیں اور TPV رپورٹیں شامل ہیں۔

شکایات کے ازالے کا طریقہ کار (GRM)

منصوبے پر عمل درآمد شروع کرنے سے پہلے مندرجہ ذیل پلانز کو پیش کرنے کی تجویز ہے جس میں قبل از تعمیراتی سرگرمیاں شامل ہیں۔ پہلا درجہ: گاؤں کی سطح پر پچائیت / دیہی کونسل پنجاب لوکل گورنمنٹ (ترمیمی آرڈیننس 2021ء) کے تحت بنائی جانے والی پلیٹفم کو نسلوں گاؤں کی برادری کی سطح پر GRM کے پہلے درجے کی حیثیت سے کام کریں گی۔ دوسرا درجہ: SDU-2 میں تحصیل سطح کے عوامی شکایات مرکز (PCC) سائٹ اور گاؤں کی سطح پر شکایات موصول، لاگ ان اور مل کرنے کے لئے ذمہ دار ہوں گے۔ ہر ضلع کے لئے SDU-2 میں ایک شکایت نمٹانے والی کمیٹی (GRC) تحصیل کی سطح پر قائم کی جائے گی جو ہر ضلع کے ذیلی منصوبہ جات / مقامات کے لئے GRM پہلوؤں کا انتظام کرے گی جس میں پراجیکٹ کی سطح پر فیصلے سازی، اقدامات

اور ذیلی و ضمنی مقام پر شکایات کے حل کی نگرانی شامل ہیں۔
تیسرا درجہ: LG&CDDPIMU (PIMU) میں پیمانہ جائزہ سمیت اعلیٰ سطح پر GRM کے مجموعی کاموں کی نگرانی کرنے کا ذمہ دار ہوگا۔

ESMF عمل آوری بجٹ

ESMF کے نفاذ کی کل لاگت کا تخمینہ 403,550,732 (پاکستانی روپے) ہے۔ جس میں ESMF نفاذ کا عملہ (ESSPIMU) بینڈ ریٹسٹ اور 16 ماحولیاتی/پانی کے معیار کے انچارج افسران کی تنخواہ استعداد کاری تربیت کے اخراجات اور TPV کی لاگت اور ESMF کی تیاری کی لاگت شامل ہے۔ چھٹی اقدامات کی لاگت کو متعلقہ ذیلی منصوبہ جات میں شامل کیا گیا ہے۔

آباد کاری پالیسی فریم ورک

PRSWSSP سماجی ذریعہ سے نجی اراضی کے حصول (اس ESMF کے سیکشن 6.5 میں قائم طریقہ کار کے مطابق رضا کارانہ زمین کے عطیہ کے علاوہ) سے مکمل طور پر گزر کرے گا۔ جب بھی کیوٹی کے عطیہ اور بڑے پیمانے پر اضافی ضرورت (عائشی یا مستقل) ہو، PIMU دوبارہ آباد کاری پالیسی فریم ورک (RPF) کی پیروی کرے گا۔
اراضی کے حصول کے لئے، ARPP موجودہ منصوبوں کی بحالی اور نجی اسکیموں کی تعمیر کے لئے تیار کی جائے گی۔ ESMF میں شامل حقدار میٹرس میں زمین کے حصول سے متعلق بنیادی اصول کے مطابق دفعات شامل ہیں۔ حقدار میٹرس نقصانات کی مختلف اقسام کا احاطہ کرتا ہے۔ دیگر ضروری شقوں کے علاوہ ESMF نے یہ بھی لازمی قرار دیا ہے کہ بے سہارا افراد اور مزاحم کو زمین کے اوپر کھڑے ڈھانچے کے متبادل نقد معاوضہ ادا کرے گا۔

CHAPTER 1 INTRODUCTION

1.1. Background⁸

Pakistan is the world's sixth most populous country with 208 million people – nearly one-third of whom remain poor. Periodic macroeconomic crises and a low human capital basis have constrained the country's growth prospects. Over the last two decades, economic growth in Pakistan has averaged at 4.4 percent a year, below the South Asian annual average of 6.3 percent. Low investment in human capital, slow progress of structural reforms, low private investment, and slow export growth due to an overvalued currency, among others, have hindered growth prospects. The country was making good progress in stabilizing its economy and implementing much needed structural reforms. However, the COVID-19 pandemic will have significant negative impacts on the economy. The closure of businesses and disruption to the supply chains are significantly affecting the services and manufacturing sectors, which account for nearly 80 percent of total gross domestic product (GDP). The impact of the ongoing economic disruption is expected to contract GDP by 1.3 percentage points in FY20.

Stunting among children under five is a fundamental health and development challenge in Pakistan. After four decades of stagnation, the country has made some progress in improving nutrition, but stunting rates remain very high. The latest Pakistan Demographic Health Service indicates a decline in child stunting from 44 percent in 2011 to 37 percent by 2018. The National Nutrition Survey (2018) indicates an overall stunting rate of 40 percent. These results are broadly consistent and reflect a stunting rate that is exceptionally high and at odds with the country's success in poverty reduction, the increase in household investments in WASH infrastructure, improvements in dietary diversity, even among the poorest, the reduction in open defecation and the institutional and policy focus on nutrition.

Under the MDGs, access to water was measured in terms of the proximity of the water source to the home/dwelling and whether that source was considered "protected". No explicit attention was paid to the safety of the water source from bacterial and other chemical contaminants or the sustainability of the resource itself. Piped water access is higher in urban areas, though it has been steadily declining over the past two decades, in both urban and rural areas. By 2018, only 13 percent of rural households had access to piped water, as compared to 29 percent of urban households, but even where piped water was available, less than 4% was piped into dwellings. The rest was provided into a yard/plot (3.9 percent), into a point in the neighborhood (1.8 percent), or via community level public taps (3.6 percent). Further, only a third of those with access to piped water had running water available for more than 6 hours a day.

Access to improved sanitation is still quite low across rural Punjab. As is the case with improved water, "improved" sanitation is an MDG indicator that was focused on ending open defecation and thus most types of latrines, in/near households get included in some type of improved sanitation tracking. Overall, among rural households in Punjab, 73 percent are seen as having access to improved sanitation. However, only 4.9 percent have access to flush/pour-flush latrines connected to a sewer system, and another 50 percent have access to flush/pour-flush latrines connected to septic tanks with any overflow leading to a communal drain. These can be relatively safe if properly engineered and the sludge properly disposed of. The WASH-Poverty Diagnostic (2018) found that due to the absence of regulatory oversight and the absence of any enforcement of design standards, septic tank toilets in rural Punjab are often little more than single tank closed pits. Even those with two or three tanks are often poorly designed and are manually emptied without any protection, with the fecal waste disposed into nearby water bodies or open spaces. Many are so poorly constructed that they routinely develop cracks – thereby contributing to groundwater contamination. The other types of toilets considered "improved" are variants of pit latrines which are clear contributors to groundwater contamination, particularly in areas where the water table is shallow. Of the remaining 27 percent, 7 percent use unimproved sources and close to 20 percent practice open defecation.

⁸ Derived from PAD

1.2. Project Description

Project Development Objective

Provide equitable and sustainable access to safely managed water and sanitation and reduce child stunting

PDO Level Indicators

- Number of villages provided safe drinking water (2000 villages)
- Number of villages with wastewater treatment facilities that generate safe effluent (2000 villages)
- Percentage increase in water quality at point-of-use (95 percent of households have WHO quality drinking water at POU)
- Percentage of O&M costs covered through tariff collection (75 percent)
- Reduction in the incidence of stunting among children aged 0-3 (33 percent -as compared to non-project villages and tehsils in project districts).

Project Components

The proposed project will combine infrastructure investments with a comprehensive behavior change and communication (BCC) campaign to: (i) provide potable water through cost-effective and sustainable investments; (ii) provide safely managed sanitation facilities to reduce the total fecal burden in the village environment; and (iii) raise awareness and promote behavior change for better hygiene practices at the household and community level to promote health and ensure the sustainability and quality of the water source.

The BCC campaign will stress the importance of safely managed water and waste – human, solid and animal - for health and economic wellbeing, and the cost of inaction on both health and household income. It will focus on household and community actions for the prevention of infectious diseases, such as COVID-19, as well as bacterial infections caused by the poor management of water and waste, and promote the safe handling of water at the point of use, animal, solid waste and wastewater management practices, water conservation and community actions to enhance the sustainability and safety of source water. It will also convey and reinforce the importance of conserving and protecting water in the natural environment, especially groundwater, as a strategy for increasing resilience to periods of drought which are projected to increase due to climate change, and adapting to gradually increasing water demand, primarily due to population and demographic changes, exacerbated by climate warming.

The project design will combine these three anticipated outputs to ensure: (i) significant progress on SDG 6 with a focus on SDG 6.1, 6.2, 6.3, and 6.B⁹ in project areas; (ii) improved nutritional health among young children measured by a decrease in the incidence of diarrhea 12 months after the interventions are fully rolled out in a village and an increase in birth weight and a reduction in child stunting 24 and 36 months after the interventions are fully rolled out in a project village; (iii) improved adult health and productivity, measured by days of work lost to illness and out of pocket health care costs related to diseases acquired through the fecal oral route; (iv) more hygienic public spaces with lower plastic use and better waste management; (v) water resource conservation and water quality monitoring; (vi) higher levels of community engagement in village and household hygiene and in monitoring and guiding resource allocation decisions through an IT-based MIS and a strong focus on participation by women.

The key implementation principles of this project are:

- The geographic targeting of project funds through an index of deprivation and support to government efforts to use data to guide resource allocation decisions.

⁹ SDG 6: Clean water and sanitation. SDG 6.1: Safe and affordable drinking water. SDG 6.2: End open defecation and provide access to sanitation and hygiene. SDG 6.3: Improve water quality, wastewater treatment and safe reuse. SDG 6.B: Support local engagement in water and sanitation management.

- Closing the hygiene loop by simultaneously and systematically eliminating all channels of fecal-oral transmission.
- Protecting groundwater from localized over-abstraction and fecal contamination to conserve it as a sustainable resource in the face of increase in demand due to population increase and climate warming, and as a buffer during drought episodes.
- Professional service delivery orientation to underpin infrastructure investments and operations, including major repairs and improvements over time, sustained primarily by cost-recovery from service beneficiaries and backed by provincial budget allocations as needed.
- Robust community participation in all aspects of project implementation, including the monitoring of budgets and of construction quality and cost, and a sharp focus on participation by women.
- Better outcome tracking and greater transparency through investment in data collection and information management, designed to operate beyond the project.

The Detail Project description is given chapter 3.

1.3. Environmental & Social Management Framework

As the precise location, design and type of subproject interventions are known at this stage, an “Environmental and Social Framework (ESMF)” has been prepared by LG&CD department for execution and implementation of Punjab Rural Sustainable Water Supply and Sanitation Project (PRSWSSP). This ESMF complies with the World Bank Environmental and Social Safeguard Operational Policies and local environmental and social laws to assess the project’s environmental and social viability through various environmental components like air, water, noise, land, ecology along with the parameters of human interest and social acceptability and mitigation of adverse impacts along with chalking out of guidelines, SOPs, procedure for detailed EA and social implications before, during and after project execution

The specific objectives of the ESMF are to:

- To establish clear procedures and methodologies for the environmental and social screening, categorization and mitigation measures of social and environmental risks/issues that may emerge before, during after the execution of subprojects under PRSWSSP, and further integration of social and environmental requirements at the planning and design stage;
- To specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring of environmental and social mitigation measures;
- To determine the training/capacity building and technical assistance needed to successfully implement the provisions of the ESMF; and
- To establish the project funding required to implement the ESMF requirements

This ESMF will be used throughout the course of Project and whereas necessary, may be revised and updated. The ESMF provides broad safeguards analysis, provide procedures and criteria for screening the proposed subproject interventions and to categorize the subprojects against adverse environmental and social impacts (if any) and recommends, where necessary, and appropriate mitigation and enhancement measures. The ESMPs of relevant subprojects will be integrated with the contract documents to facilitate smooth implementation of safeguards during project operation phase

1.4. Methodology

Methodology for the ESMF comprises upon a series of integrated tasks and this was based on a combination of field and desktop assignments. The specific steps involved for ESMF design include:

1.4.1. Situation Analysis

- Study the **overall Project details** and the proposed sub-projects details, their design, nature and key eligible potential infrastructure investments to be supported by the Project.
- **Secondary data collection** on existing social and environmental conditions of the 16 districts of Punjab including: Khushab, Mianwali, Sargodha, Chakwal, Bhakkar, Pakpattan, Chiniot, Jhang, Rajanpur, Rahim Yar Khan, DG Khan, Lodhran, Bahawalpur, Muzafargarh, Bahawalnagar, Multan.

1.4.2. Sample Based Survey for baseline data collection

- Sample based survey of 64 villages was carried out to collect broad baseline data on physical, biological and socio-economic conditions prevailing in the area of each sub-project.
- Objective of sample survey was to determine the environmental and social sensitivity of the area.
- For sample survey, a simple questionnaire was drafted (attached as Annexure A)

1.4.3. Data Analysis

- Primary data collected from sample villages was analyzed to determine the social and environmental baseline conditions of 64 villages ¹⁰

1.4.4. Review of Legal Framework

- Review the national and provincial and local government level policies, legislation and regulations related to environmental and social aspects and determine relevance for the proposed activities under the Project.
- Review the WB policies related to environmental and social safeguards and determine their relevance with the project interventions.

1.4.5. Screening and Categorization of Sub-Projects

- ESMF includes a screening procedures and checklists. Screening of the Sub-projects will be carried out to determine the environment and social impacts in accordance with the criteria defined in the ESMF.

1.4.6. Stakeholders Consultation

- For preparation of ESMF, stakeholder's consultation with a selected sample of communities and other stakeholders was carried out and feedback /comments obtained through consultation process has been incorporated in the ESMF.

¹⁰ For baseline data collection a Sample Based Survey (SBS) was conducted by the ESMF Consultant. For SBS, 64 villages were surveyed from 16 Project Districts. Details of SBS are given in Chapter 4.

1.4.7. Social and Environmental Impacts Analysis

- Anticipated social and environmental impacts analysis are carried out in accordance with the nature of proposed sub-projects and their related activities and in accordance with the overall baseline conditions of the Project areas.

1.4.8. Proposed Mitigation Measures

- Broad mitigation measures are proposed for social and environmental impacts identified during social and environmental impacts analysis. Specified mitigation and management plans will be developed as a part of the sub-project specific instruments.

1.4.9. Resettlement Policy Framework

- Resettlement Policy Framework (RPF) has been prepared and will be applicable where land and resettlement issues may arise because of subprojects interventions.

1.4.10. Structure of ESMF

The proposed structure of ESMF is as follows:

00 Executive Summary Executive summary providing key findings has been prepared for the general public use. (Translation of the executive summary in Urdu has been prepared along with the English version at the start of ESMF.)	01 Introduction Introduction describes the brief overview about the ESMF.	02 Legal and Institutional Framework Review Discusses the legislation, regulations, guidelines relevant to the project and ESMF, as well as the World Bank's policies relevant to the environmental and social assessments, indicating how the various requirements have been or will be complied with during the planning and implementation stages of the subprojects.	03 Project Description This chapter provides background and different components of the Project, objectives of Project and the types of sub-projects.	04 Environmental and Social Baseline Conditions Environmental and social baseline conditions of Project Districts/Tehsils are presented in this chapter through Primary and secondary data collection.
05 Stakeholders Consultation Stakeholder consultations have been covered in this Chapter.	06 Impact Assessment and Recommended Mitigation Measures The broad assessment of environmental as well as social impacts, their mitigation measures are presented in this chapter including the VLD processes and procedures.	07 Environmental and Social Management Framework The environmental and Social Management Framework is presented in this chapter which deals with the social and environmental issues, management and monitoring details and Institutional Framework	08 Resettlement Policy Framework This chapter describes the Resettlement Policy Framework (RPF) and Entitlement Matrix.	00 Annexures Template for Generic ESMP, Environmental and Social Screening Checklist, Voluntary Land Donation Screening Checklists etc.,

Figure 1: Structure of ESMF

CHAPTER 2: LEGAL AND INSTITUTIONAL FRAMEWORK REVIEW

2.1. Introduction

The Government of Pakistan and GoPunjab have enacted a range of laws, regulations, policies and procedures for management and mitigation of social and environmental impacts for infrastructure development projects. This chapter discusses the federal, provincial and local policies and laws and WB policies applicable for PRSWSSP to deal the environmental and social issues

2.2. Policy & Regulatory Review of Environmental Aspects

Following is the list of important policies relevant to environmental management of PRSWSSP:

1. Pakistan Climate Change Policy, 2012
2. Punjab Water Policy 2011
3. National Sanitation Policy, 2006
4. Punjab Sanitation Policy, 2015
5. Punjab Urban Water and Sanitation Policy, 2007
6. Punjab Policy on Controlling Smog, 2017

2.2.1. National and Provincial Laws, Regulations, Procedures and Guidelines dealing the Environmental Aspects

- 1 Punjab Environment Protection Act, 1997
- 2 PEPA Review of IEE/EIA Regulations, 2000
- 3 Punjab Local Government Act, 2019
- 4 Canal and Drainage Act 1873 and Amendment Act, 2016
- 5 Punjab Wildlife Protection, Conservation and Management Act, 1974
- 6 Guidelines for Review and Preparation of Environmental Reports, 1997
- 7 Guidelines and Checklists adopted by GOP after 18th Amendment
- 8 Punjab Environmental Quality Standards for Drinking Water
- 9 Punjab Environmental Quality Standards for Motor Vehicle Exhaust and Noise
- 10 Punjab Environmental Quality Standards for Ambient Air
- 11 Punjab Environmental Quality Standards for Noise

2.3. Policy & Regulatory Review of Social Aspects

Several laws, regulations, procedures, and technical guidelines have been developed at the federal and provincial levels to address key social risks. The legal framework includes legislation addressing land acquisition, social analysis, and labor protections among many others. The most important of these overarching laws and regulations related to the social aspects of the Project include the following:

2.1.1. National and Provincial Policies

1. Punjab Labor Policy, 2018

2.1.2. National and Provincial Laws, Regulations, Procedures and Guidelines

1. Punjab Local Government Act, 2019
2. Panchayats and Neighbourhoods Councils Act, 2019
3. Punjab Land Revenue Act, 1967
4. Punjab Local Government *Musalihat Anjuman* (Constitution and Functions) Rules, 2016
5. Land Acquisition Act 1894 and Punjab Land Acquisition Rules, 1983
6. Pakistan Antiquities Act 1975 and Punjab Antiquities Act, 2012
7. Punjab Restriction of Employment of Children Act 2016
8. Labor Laws Punjab and ILO conventions ratified by the government
9. Protection Against Harassment of Women at the Workplace Act, 2010
10. Guidelines for Public Consultation, 1997

PRSWSSP

2.4. Relevance of Policy and Legal Framework with PRSWSSP

2.4.1. Environmental Aspects

With reference of applicability of policy and legal framework, **Table 1** elaborates their salient features and relevance with the PRSWSSP for environmental management

Table 1: Legal and Policy Framework for Environmental Aspects

#	Name of Policies/National and Provincial Laws, Regulations, Procedures and Guidelines	Relevance and Applicability with PRSWSSP
1.	Punjab Environment Protection Act 2012	Punjab Environment Protection Act 2012 being as principal legislation of environmental protection in Punjab Province envisages protection, improvement, conservation and rehabilitation with the help of legal action against polluters and green awakening of communities. The discharge or emission of any effluent, waste, air pollutant or noise in an amount, concentration or level in excess of the Punjab Environmental Quality Standards (PEQs) specified by the Punjab Environment Protection Agency (PEPA) are prohibited under the Act. According to <i>Section 11</i> of Punjab Environment Protection Act, 2012: <i>Prohibition of certain discharge or emissions</i> (1) no person shall discharge or emit or allow the discharge or emission of any effluent or waste or air pollution or noise in an amount, concentration or level which is in excess of the Punjab Environmental Quality Standards; whereas according to the <i>section 12</i> of Punjab Environment Protection Act, 2012: <i>Initial Environmental Examination and Environmental Impact Assessment</i>-(1) “No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an Initial Environmental Examination or where the project is likely to cause an adverse environmental effect, an Environmental Impact Assessment and has obtained from the Provincial Agency approval in respect thereof” <i>Section 11,13,14,6 and 17 will be applicable on PRSWSSP during and after execution of the sub-projects</i>
2.	Pakistan Climate Change Policy, 2012	PRSWSSP targets to strengthen the implementation of adaptations and mitigation measures prescribed in PCC Policy, 2012, in selected 16 Districts/Tehsils of Punjab in terms of <i>Rainwater harvesting, solid waste management (methane reduction), wastewater treatment and groundwater recharge.</i>

3.	Punjab Drinking Water Policy, 2011	The overall objective of Punjab's Water Policy is to provide clear policy directions to the Government of Punjab on the sustainable management and development of water from all sources of water (surface water, groundwater and rainwater), for all sub-sectors of water use (domestic, stock water, agriculture, industry). <i>PRSWSSP supports Punjab Drinking Water Policy and activities for drinking water supply will be designed according to PDWP policy guidelines.</i>
4.	Punjab Water Act 2019	An Act to comprehensively manage and regulate water resources in the Punjab in the interest of conservation and sustainability. It is expedient to provide for comprehensive management of all water resources in the Punjab and to regulate their use in the interest of conservation and sustainability and matters connected with and ancillary thereto. <i>PRSWSSP supports Punjab Water Act, 2019 and activities for drinking water supply will be designed in the light of PWA, 2019.</i>
5.	National Sanitation Policy, 2006	The National Sanitation Policy of Pakistan, 2006, stresses on the safe disposal of excreta away from the dwellings, creation of an open defecation-free environment and, promotion of health and hygienic practices in the country. <i>PRSWSSP subprojects are in line with the sanitation policy guidelines, 2006</i>
6.	Punjab Urban Water and Sanitation Policy, 2007	The Punjab Urban Water and Sanitation Policy of the Government of the Punjab is intended to guide and support provincial institutions, District Governments, Tehsil Municipal Administrations, Water Utilities and communities for improving water and sanitation services. <i>PRSWSSP will get support from Punjab Urban Water and Sanitation Policy, 2007 and will use to promote the key policy principles.</i>
7.	Pakistan Approaches to Total Sanitation, 2010	The PATS contains number of branded total sanitation models, having a key role of communities, which include: • Community Led Total Sanitation • School Led Total Sanitation • Component Sharing • Sanitation Marketing • Disaster Response The above models may be adopted by the provincial and local governments in accordance to what suits best in their local context and in accordance with the reinforcement values of PATS.

		<i>PRSWSSP will adopt the applicable models of PATS as and where necessary</i>
8.	Canal and Drainage Act 1873 and Amendment Act 2016	According to part VII of Drainage clause 59 (A) : Prohibition and control regarding the discharge of effluent into canal and drainage works.– (1) The Provincial Government may, by notification in the official gazette, prohibit the discharge of any effluent, including any solid or liquid matter or combination of them from industrial, municipal or any other source, into any river, canal and drainage work including any natural drainage channel. <i>In line with this act, PRSWSSP is designed for the safe disposal of solid or liquid waste.</i>
9.	Punjab Wildlife Protection, Conservation and Management Act, 1974	<i>PRSWSSP will use this Act to ensure the protection and conservation of all forms of wildlife during execution of project.</i>
10.	Punjab Environmental Quality Standards (PEQs)	Before intervention of subprojects under PRSWSSP, PEQs of drinking water, wastewater will be checked by recent secondary data. <i>If any risk associated with the prescribed limits under PEQs, may be identified at the environmental screening stage, ESMP of the relevant subproject will provide the necessary mitigation measures and analysis of relevant parameters before, during and after the execution of that subproject, from EPA approved laboratories, will be mandatory.</i>
11.	Guidelines and Checklists adopted by GoPunjab after 18th Amendment	<i>PRSWSSP will make use of these Guidelines and Checklists where it will be sector wise required or otherwise.</i>
12.	Punjab Growth Strategy 2018	The document endorses Punjab's health sector vision and strategy, which emphasizes improvement of water, sanitation and hygiene services to prevent communicable diseases and <i>PRSWSSP, will follow this strategy.</i>

2.4.2.Social Aspects

With reference of applicability of policy and legal framework, **Table 2** elaborates their salient features and relevance with the PRSWSSP for social management

Table 2: Legal and Policy Framework for Social Aspects

#	Name of Policies/ National and Provincial Laws, Regulations, Procedures and Guidelines	Relevance and Applicability with PRSWSSP
1.	Punjab Local Government (Amendment) Ordinance 2021	The Panchayats and Neighbourhoods Councils Act, 2019 (PVPNCA 2019) was repealed in February 2021

		through an amendment to the PLGA 2019. The result was the Punjab Local Government (Amendment) Ordinance 2021 that established a new tier of local government at the village level called Village Councils, which incorporated the main functions of village panchayats prescribed in the PVPNCA 2019 with regard to water, sanitation, and waste management. <i>Village Councils made under this Act will act as 1st tier of GRM and will strengthen the accountability. A detailed capacity building/training program will be designed for VCs in the light of Training / Capacity Building Framework prescribed in the ESMF</i>
2.	Punjab Local Government Act, 2019	- According to Chapter XXVII of PLGA 2019 “Responsiveness to Citizen’s Needs” the sub headings 212. Duties of local governments towards residents of local area: (2) A Local Government shall take every measure within its means to consult with and promote effective participation by the residents in its affairs. <i>Under 212, sub-sections 2,3 and 4 of Chapter XXVII will be applicable in PRSWSSP during public consultation and disclosure of information to public.</i> Section 213 of Chapter XXVII “Requirements to Consult Residents in certain cases”, makes public consultation mandatory in specific circumstances. Section 214. “Community Initiatives” also focuses on community engagement and all the sub-sections of Section 214 will be applicable on PRSWSSP. Fifteenth Schedule of PLGA 2019 serial B, F, G, H and J Municipal Offences relating to littering and spoiling, sources of water supply, maintenance of trees, plants and hedges, public nuisance and public health, and public safety respectively, will be applicable during execution of sub-projects of PRSWSSP.
3.	Punjab Tehsil / Town municipal Administration (Works) rules, 2003 (amendments, 2016)	According to Chapter VIII-A Occupational Safety & Hazard 50 A Workplace Safety:- 1) the Contractor shall ensure that: (a) any hazard at the place of work, during the execution of work, shall not cause any loss of life. (b) The work shall not loss to the property of any other person; (c) Before commencing the work, all the safety equipment are in place and safety measures have been taken as necessarily required at the place of work:

		(d) All necessary safety requirements are strictly adhere to at the place of work; and (e) Protective safety equipment for workers, as specified by the local government engineer, are functional and in working order. 50 B the Local Government Engineer shall ensure that: All the safety measures, during the operation and maintenance of existing infrastructure, according to the nature of work, have been adopted to secure life and property; and All precautionary measures and use of sewer safety equipment specified in Schedule have been taken in respect of; Sanitation functions ; or Cleanliness of sewer, manholes and descending sanitary workers in the sewer manholes. All the above mentioned clauses will be applicable on construction labor/workers/ and sewer men/sanitary workers during execution of subprojects implemented under the PRSWSSP
4.	The Punjab Occupational Safety And Health Act, 2019	In The Punjab Occupational Safety and Health Act, 2019 relevant sections are: Sec 8. Safety and Health, Sec 10. Consultation Sec 13. Notification and investigation of accidents, dangerous occurrences and occupational illness. PRSWSSP will consider these provisions for construction workers/labor
5.	Punjab Local Government Musalihat Anjuman (Constitution and Functions) Rules, 2016	PRSWSSP supports these rules and will comply with these rules to restrict • Forced labor • Public insult, assault, and degradation of females and • Sexual harassment
6.	Land Acquisition Act, 1894 and Punjab Land Acquisition Rules, 1983	LAA 1894 and Punjab Land Acquisition Rules will be applicable in PRSWSSP where private land will be acquired to carry out the Project activities. However, for land acquisition, compensation, livelihood restoration, and assessment and management of other social impacts, a section of Resettlement Policy Framework for PRSWSSP in line with the WB policies is also prepared and is given at the end of this ESMF as Chapter 8.
7.	Pakistan Antiquities Act 1975 and Punjab Antiquities Act ,2012	Both laws will be applicable to the Project and the notified archeological/cultural heritage areas/sites will be screened carefully before undertaking sub-projects construction activities under the PRSWSSP during

		Environmental & Social Screening of each subproject under PRSWSSP by using the E&S Screening Checklist However, under the law, chance finds will be reported to the Archeology Department within seven days. If ruins are discovered, then all construction work must be stopped. The department will then conduct a site assessment. ESMPs prepared for PRSWSSP will cover these aspects in detail and this aspect is also included in the E &S Screening Checklist (<i>attached as Annexure L</i>) and Chance Find Procedures are also given (<i>attached as Annexure M</i>)
8.	Punjab Restriction of Employment of Children Act 2016	Under this Act: 3. Prohibition on employment.— (1) An occupier shall not employ or permit a child¹¹ to work in the establishment. (2) An occupier shall not employ or permit an adolescent¹² to perform any hazardous work in the establishment <i>Both these clauses will be applicable to PRSWSSP during hiring and management of construction labor.</i>
9.	Labor Laws Punjab and ILO Conventions ratified by the Government	<i>PRSWSSP will comply with all the laws and ILO Conventions ratified by the Government of Pakistan applicable on construction labor/workers.</i>
10.	Guidelines for Public Consultation, 1997	<i>These Guidelines will be used at planning and implementation stages of sub-projects under PRSWSSP.</i> Further, Public Consultation Framework has been designed and included in the ESMF.
11.	Guidelines for Regulation of Disclosure of Environmental Information & Citizen engagement 2020	<i>These guidelines are relevant to PRSWSSP and will be used for public disclosure of environmental information of PRSWSSP sub-projects and relevant instruments and GRM and citizen engagement.</i>

¹¹ . "child" means a person who has not attained the age of fifteen years (Ref: Punjab Restriction of Employment of Children Act 2016)

¹² ."adolescent" means a person who has attained the age of fifteen years but has not attained the age of eighteen years (Ref: Punjab Restriction of Employment of Children Act 2016).

2.5. World Bank Operational Policies

Along with the local environmental and social laws and policies, it is obligatory for the project to abide by the World Bank safeguard policies. The triggering status of the World Bank Operational Policies is discussed as following:

Policy	Triggered/Not Triggered	Applicability
OP 4.01 - Environmental Assessment	Yes	<i>This OP is triggered</i> because the project will support, among others, the “development of infrastructure for water supply and sanitation” involving physical construction activities that may have some negative impacts on environment like soil and water Contamination. For all those sub-projects having negative impacts on environment will be categorized as E2 and as per compliance of OP 4.01,an ESMP will be prepared to mitigate the anticipated impacts
OP 4.04 Natural Habitat	No	This policy is not triggered as project interventions are not planned in natural habitats at this point.
OP 4.36 Forests	No	This policy is not triggered in case of PRSWSSP subprojects because the hard component will not relevant to any reserved forest protected under Forest Department, Government of Punjab.
OP 4.09 Pest Management	No	The project interventions do not use any pesticides and hence this policy is not triggered
OP 4.12 Involuntary Resettlement	Yes	In most instances, it is expected that only small parcels of land will be required for project interventions. Anyhow, OP 4.12 will be triggered as in some project interventions land may need to be acquired (e.g., for water filtration plants, holding and overhead tanks, basic filtration unit, drainage and disposal). Certain interventions may also involve minor temporary impacts on livelihoods (due to restricted access during construction; temporary displacement of vendors/hawkers etc.) which could require small scale compensation. A Resettlement Policy Framework (RPF) has been prepared for such interventions. The RPF will also be accessible and available locally and at the levels of the

		PIU and district level offices of implementing agencies. Resettlement Action Plans (RAPs)/ ARAP if required, will be subsequently developed and implemented. Anyhow, land acquisition and resettlement will be avoided and if requires, land needs will be met through Voluntary Land Donation (VLD) and usage of Government owned land. The procedure for VLD with clear guidance on implementation; process for ensuring voluntariness; and, criteria for accepting donations to ensure that nobody is worse off after donating lands will be provided in the RPF. The VLD process will be monitored closely at the local level to ensure that there is no coercion for donations and that community members do not become worse off or lose their livelihood due to the donation.
OP 4.10 Indigenous Peoples	No	No indigenous people as defined in the Policy are known to exist in the area. Hence OP 4.10 is not triggered.
OP 4.11 Physical Cultural Resources	No	The project activities are at small scale and household level and hence will not involve large excavation and are not expected to impact the cultural resources. However, chance find procedures are included in the ESMF and guidance will be given to ensure they are also included in sub project ESMP as matter of precaution while E&S Screening Checklist will be used to identify PCRs at screening stage.
OP 4.11 Safety of Dams	No	The project does not involve any dam related activity; therefore, this policy is not triggered.
OP 7.60 - Projects in Disputed Areas	No	The project is not located in any disputed area and all interventions are planned in Punjab province, so this policy is not triggered.
OP 7.50 - Projects on International Waterways	Yes	This policy will be triggered. The Project has got the PAD cleared from Legal department. An exemption for notification has been approved by the SAR VP.

2.6. World Bank Guidelines

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

- Environment, Health, and Safety (EHS) Guidelines 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.
- Labor influx guidance note (2016).

PRSWSSP

CHAPTER 3 PROJECT DESCRIPTION

3.1. Background

The Project (PRSWSSP) will provide rural water supply and sanitation solutions in 16 districts /Tehsils in Punjab. Interventions will include governance and institutional reforms, investments for both water supply and sanitation, strengthening monitoring and grievance mechanisms through use of IT, capacity development and behavior change. The project is targeting districts in Punjab that are the poorest and have the worst outcomes on child stunting, access to and quality of sanitation infrastructure, and bacterial contamination of drinking water at source and at point of use.

Overall, the project is expected to cover approximately 2000 villages (main settlements) and 8500 small settlements. And serve a population of 6.65 million of the most deprived citizens of Punjab.

The project will go to 16 districts. The 16 districts and the lowest ranked tehsil are in each: Rajanpur (Tehsil Rojhan), Rahim Yar Khan (Tehsil Liaqatpur), Dera Ghazi Khan (Tehsil Taunsa), Lodhran (Tehsil Karor Pacca), Bahawalpur (Tehsil Khairpur Tamewali), Muzaffargarh (Tehsil Alipur), Bahawalnagar (Tehsil Bahawalnagar), and Multan (Tehsil Shuja Abad) in south Punjab; Bhakkar (Tehsil Darya Khan), Pakpattan (Tehsil Pakpattan), Chiniot (Tehsil Bhowana), and Jhang (Tehsil Ahmad Pur Sial) in central Punjab; and Khushab (Tehsil Noorpur Thal), Mianwali (Tehsil Isa Khel), Sargodha (Tehsil Kot Moman), and Chakwal (Tehsil Kallar Kahar) in north Punjab. All sixteen districts are the worst off in their region. Overall, access to water and sanitation and child health indicators are much worse in South Punjab as compared to the averages for central and northern Punjab.

3.2. Facilities under PRSWSSP Project

The facilities of water supply include:

- skimming wells,
- Disinfection/treatment works,
- piping network,
- overhead reservoirs, and
- metered connections.

Facilities for sanitation include:

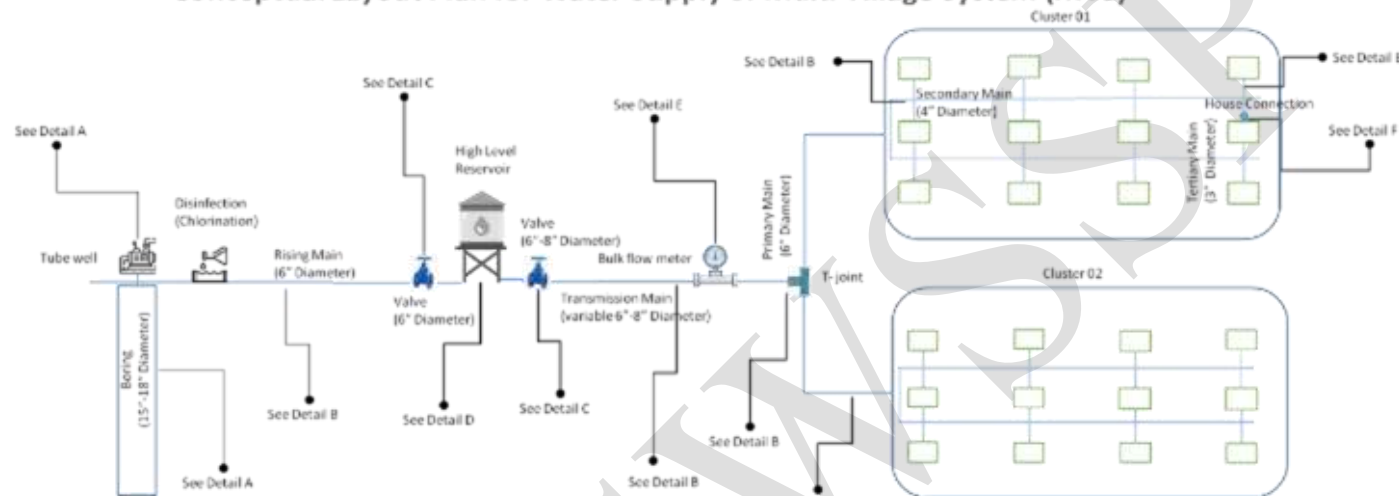
- piping network,
- septic tanks,
- anaerobic baffled reactors,
- bio-trickling filters, and
- sludge drying beds.

Facilities for SWM include:

- a village level composting arrangement, and
- a solid waste collection point.

PRSWSSP

Improving Access To Sustainable Water and Sanitation Services in Rural Areas of Punjab Conceptual Layout Plan for Water Supply of Multi Village System (MVS)



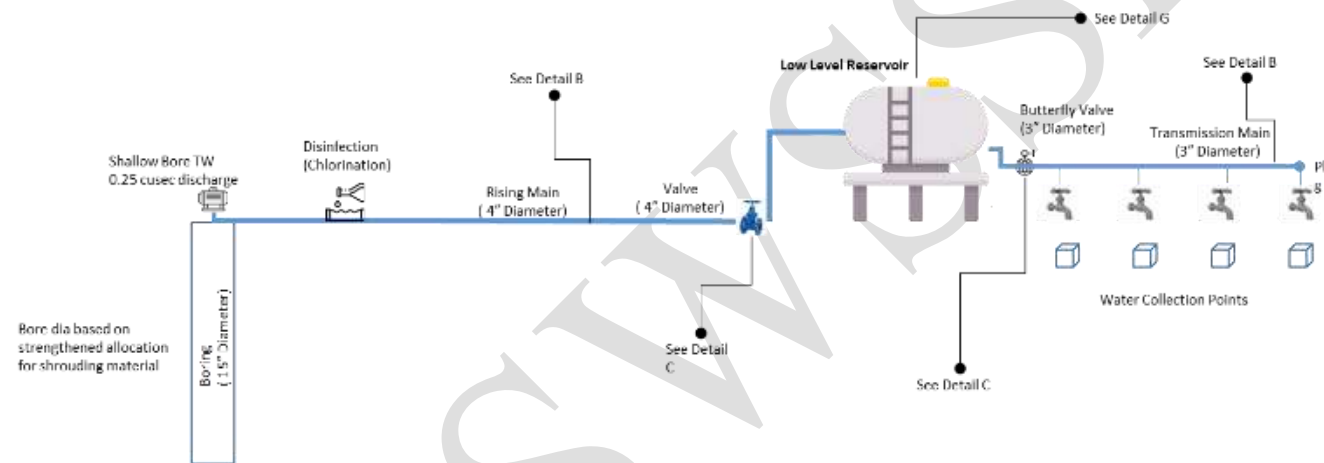
Notes

- Consumptive use is reconciled as 70 l/cap/day (15 gal/cap/day)
- Multi-Cluster System solution to be considered for population ranging between 10,000-20,000 persons
- Tube well of 0.25-0.5 cusec capacity is recommended for freshwater abstraction and pumping hours derived from hydraulic analysis
- Hazen William Equation is used to determine head losses in pipes.
- Pipe diameters varying from 3"-8" and the residual pressure in the distribution main is 8-12 m
- 20,000 gallons capacity is considered for high head reservoirs with the static head of 40-50 ft.
- Residual chlorine concentration recommended at 0.2 mg/l.
- Bulk flow metering on gravity mains from high head reservoirs
- Drilling depth based on prevailing water table conditions but to not exceed 100 ft adjacent to the recharging source. Rotary drilling is recommended for drilling with i/d of 15"-18" towards adequacy in shrouding. Housing pipe of 12" i/d is proposed for the bore.
- Preliminary cost estimates are based on system components. Detailed cost estimates to be ascertained based on connection details.

Figure 2: Schematic Layout of MVS Water Supply System Interconnects

Improving Access To Sustainable Water and Sanitation Services in Rural Areas of Punjab

Conceptual Layout Plan for Water Supply of Single Village System (SVS)



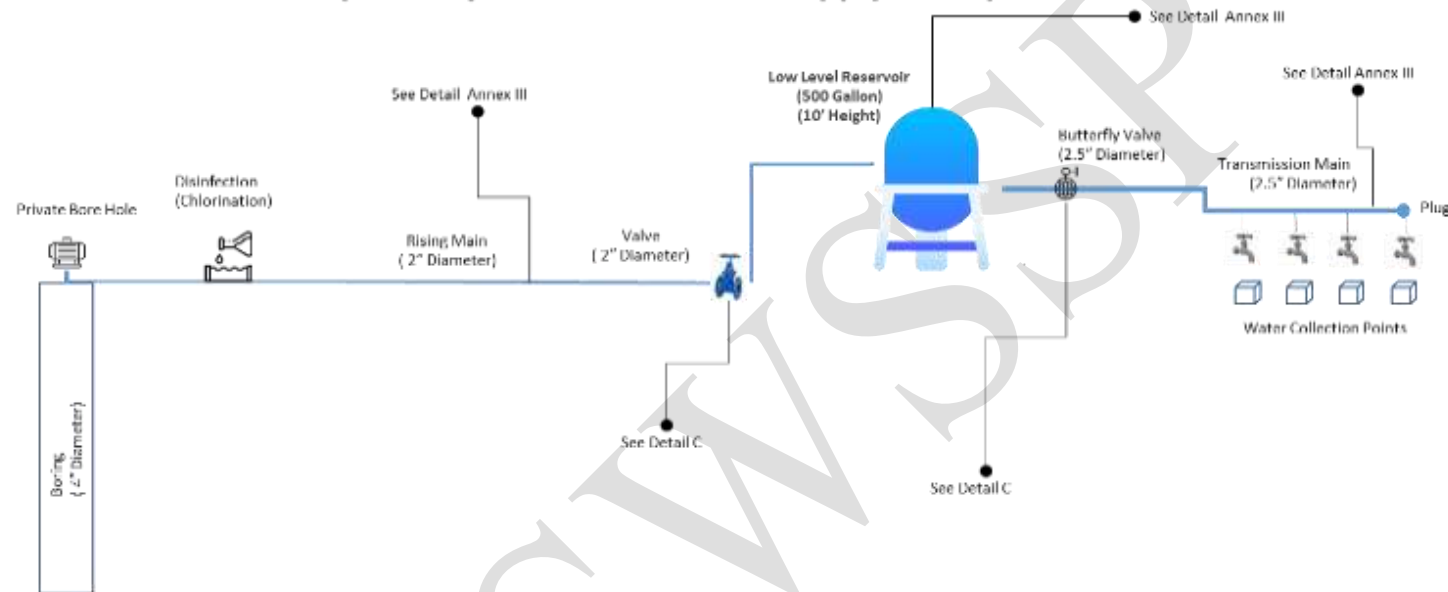
Notes

- Single Village System (SVS) solution is to be considered for the population varying from 1,000-2,000 persons/settlement
- Motorized pumps of 0.25 cusec capacity to be used
- 2500 gallons low-level reservoir is to be provided having a variable height of 5-6 ft.
- For disinfection, residual chlorine is to be maintained 0.2 mg/l
- Sluice valve installation is to be made at the upstream of the reservoir (on rising main) and butterfly valve on the downstream of the low-level reservoir (before entering into distribution system)
- By adopting the rotary drilling method, borehole of 15" i/d is to be made for sufficient thickness of shrouding around.
- Preliminary cost estimates are based on system components. Detailed cost estimates are to be done based on connection details

Figure 3: Schematic Layout SVS Water Supply System Interconnects

Improving Access To Sustainable Water and Sanitation Services in Rural Areas of Punjab

Conceptual Layout Plan for Water Supply Standposts



Notes

Standpost solution for service population varying from 200-500 persons

Motorized pumps of 0.05 cusec capacity to be used (private bore)

500 gallons low-level reservoir with base height of 5-6 ft.

For disinfection, residual chlorine is to be maintained 0.2 mg/l

Sluice valve installation is to be made at the upstream of the reservoir (on rising main) and butterfly valve on the downstream of the low-level reservoir (before communal distribution system)

Bore dia of 4 inches and suction pipe of 2 inches

Preliminary cost estimates are based on system components. Detailed cost estimates are to be done based on connection details

Figure 4: Schematic Layout of Communal Water Supply System Interconnect

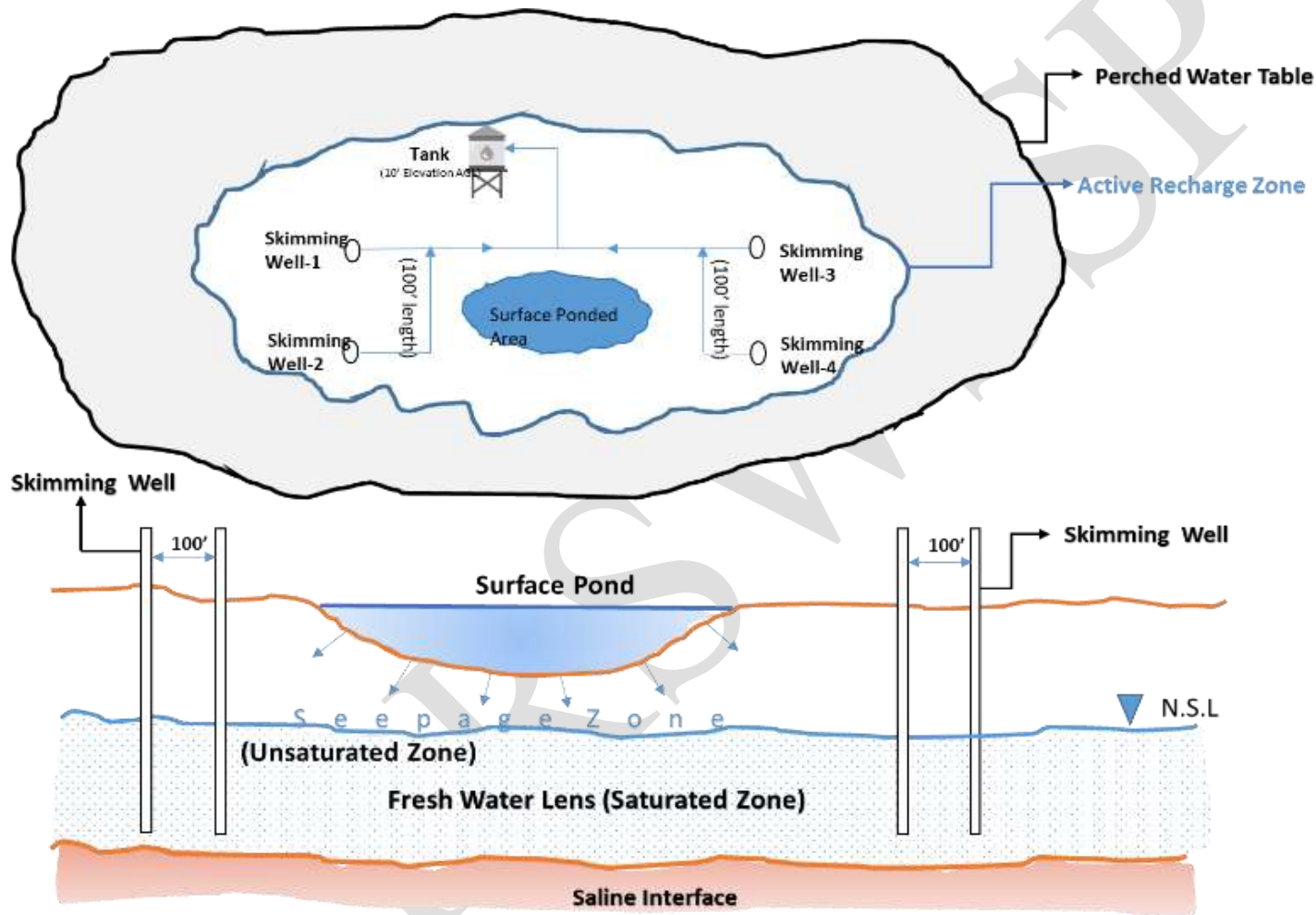


Figure 5: Schematic Layout of Skimming Well Configuration

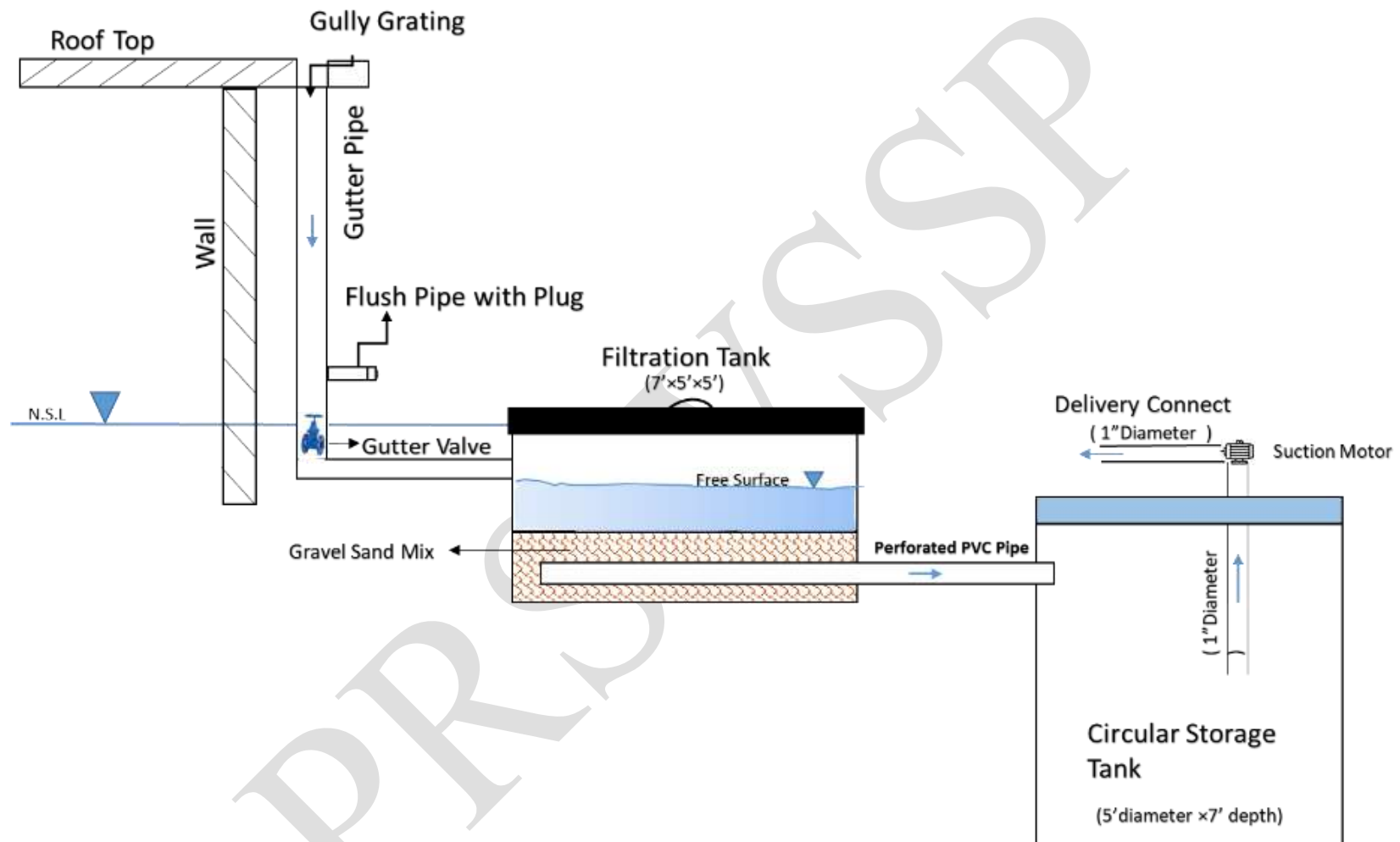


Figure 6: Typical Low-Cost Rainwater Harvest Solution at the Household Level

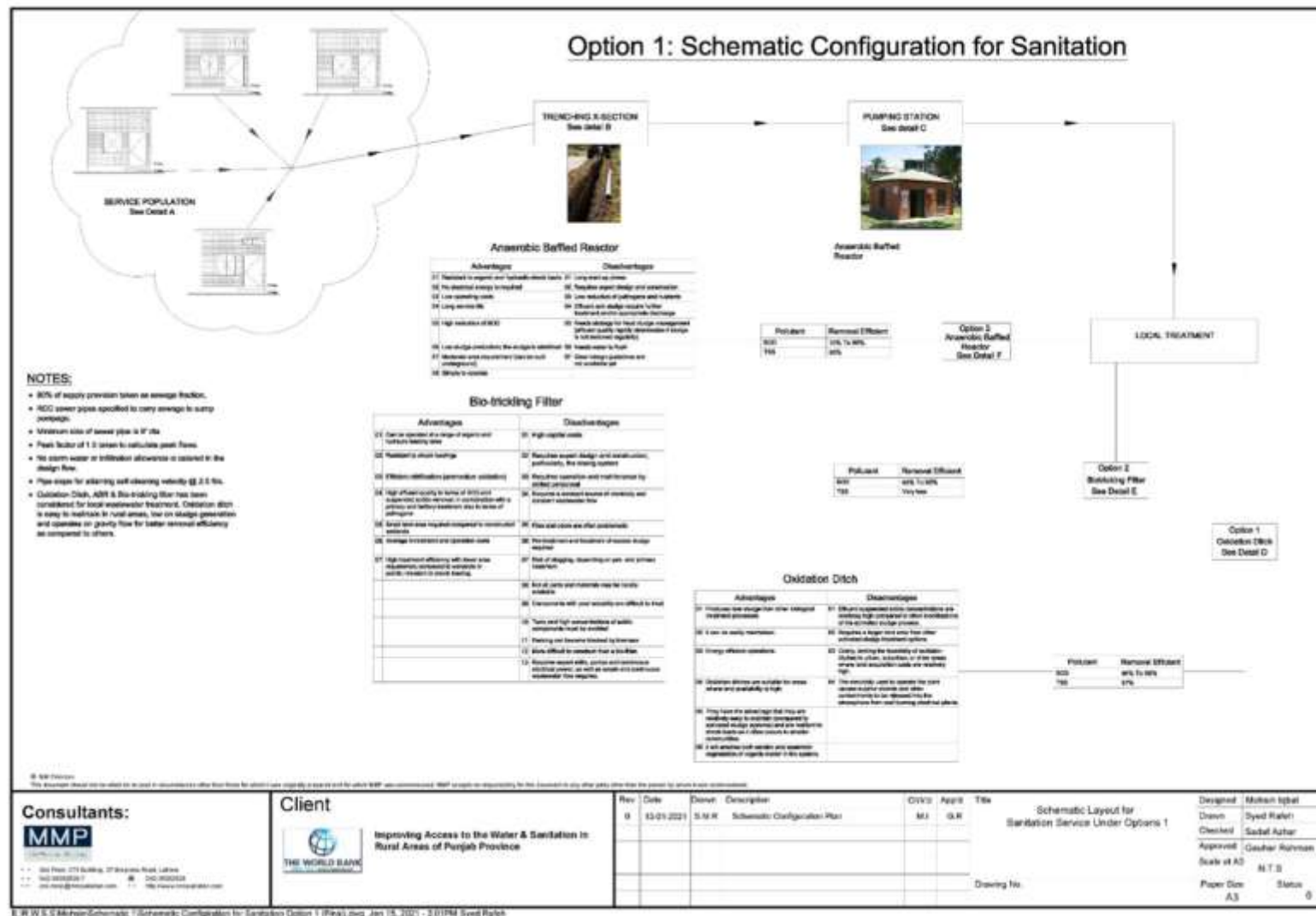


Figure 7: Schematic for Options in Collection and Final Disposal of Sewage through Treatment

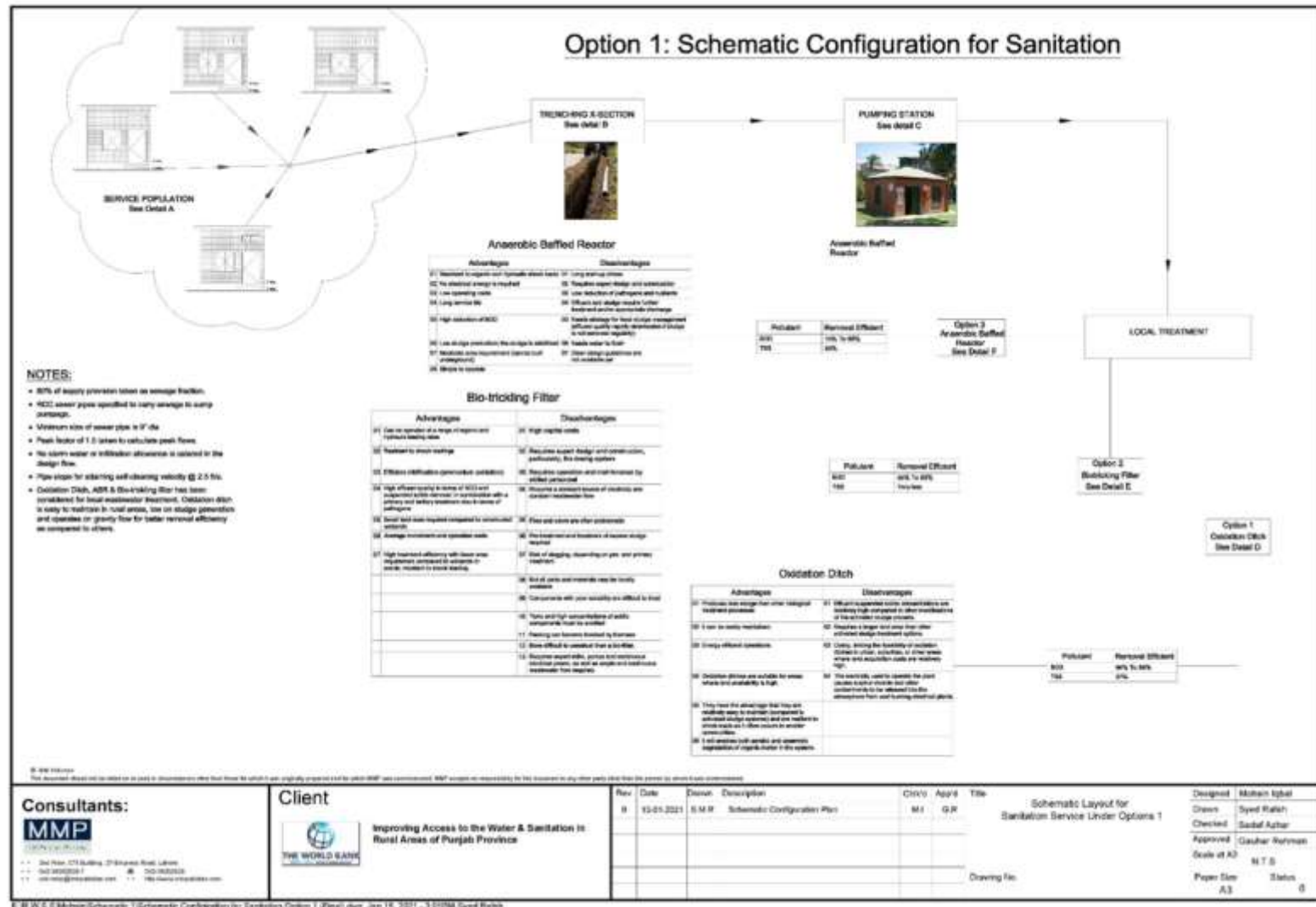


Figure 8: Schematic for Collection and Final Disposal of Sewage through Soakage-Well Solution

3.3. Project Components

The details of components are given below:

3.3.1. Component 1: Water Supply and Sanitation Infrastructure Development (US\$ 467.1 million)

Component 1 will fill the infrastructure gap in the existing traditional rural WSS systems that underlies the low access to safely managed water and sanitation in rural Punjab. Both, water and sanitation systems in their traditional architecture pose health risks to the populace and threats to environment, therefore the project interventions related to infrastructure will upgrade the prevailing systems. For sanitation, the project will move sewage drains underground or cover surface drains and ensure the treatment of waste-water and fecal sludge to resolve the health and environment concerns. It will also clean up the existing surface drains and stagnant ponds to enable better storm water drainage and thereby lower flood water retention and consequent physical damage and public health risks. For water supply, it will move households to piped water supply with metered connections and ensure that all water is treated for safety. Specifically, it will: (i) increase reliable access to treated piped water supply inside dwellings, with 100 percent metering to ensure sustainability, and (ii) increase access to safely managed sanitation, primarily by connecting household latrines to a network of covered sewers and by ensuring safe disposal of treated wastewater. Depending on the treatment option used, septic tanks may be provided. In all cases, safe disposal of fecal sludge will be ensured. There are several technology options for drinking water supply, wastewater treatment and toilet-to-sewer systems. The selection of technology options for this project is based on a feasibility study that was undertaken to evaluate the appropriateness and cost-effectiveness of available options given the variation in village conditions in rural Punjab, including topography, groundwater salinity levels and distance to available water sources among others. During implementation, these will be used as a guide but customized technological options, with designs for both water supply and sanitation infrastructure, will be developed by an engineering design Consultant for each village. In total, up to 2009 villages (main settlements) and 8500 small settlements will benefit from project interventions.

Subcomponent 1.1: Sanitation Infrastructure Development (US\$ 310.1 million).

This subcomponent will focus on fecal sludge collection, transference, treatment and disposal. The assessment of technology options in the study was done against the following principles and guidelines:

- (a) The effluent does not exceed threshold limits defined by the national and provincial laws. Punjab Environmental Quality Standards (PEQS) define thresholds for municipal effluent to ensure the health of the community and the protection of surface and groundwater;
- (b) Where treated wastewater is reused for irrigation, threshold limits defined by FAO or an accredited body, will be applied, in the absence of any national laws;
- (c) The processes and outputs are compliant with Pakistan's commitment to Sustainable Development Goal 6;
- (d) Maintenance, monitoring and management requirements are planned through professional service delivery units and the monitoring role of the community will be dove-tailed through behavior change and capacity building component;

- (e) Existing informal systems, whereby wastewater and fecal waste are discharged to open drains and open ponds for treatment through natural processes with no attention to build-up of sludge, are upgraded to sewerage systems that collect, treat, and safely dispose of fecal waste.

Household Disposal of Fecal Waste The study on technology options recommended two options for household disposal of fecal waste.

- (c) Pour-flush toilets with two/three stage septic tanks: This is international best practice and leads to removal of 25 percent of organic matter before transference through a sewerage network for final treatment.
- (d) Pour-flush toilets with combined (multi-house) septic tanks: This is a lower-cost option and has already been piloted by UNICEF in South Punjab.

Drainage network Most villages in Punjab have individual household toilets that are connected to open surface drains, and a significant number are basically pit latrines with underground leachate pits. These pits and drains are a source of fecal contamination of groundwater and the village environment, respectively. The Project will upgrade the sewage conveyance system through sub-surface closed conduits with manholes at an appropriate distance and junctions. Where an upgrade or installation of household toilets is required, beneficiary households are expected to undertake the investment themselves or through community support. For the extreme poor, the project will consider subsidizing part of the expense, if community support is not sufficient.

Existing open drains will be retained to serve communities for storm water drainage They will divert rain and flood water to nearby water bodies and will be kept separate from the sewerage network. Currently these drains discharge untreated wastewater directly into water bodies thus, the proposed sanitation interventions will also protect downstream communities that rely on these water bodies. These open drains will also contribute to rainwater harvesting in areas where they are currently discharging into village ponds – the project will support desludging and restoration of these ponds. The separation of storm water drainage from sewerage will also increase the flood water conveyance capacity of rural settlements, which will reduce retention of water inside settlements and consequently mitigate the impact of floods. The separation will also prevent the mixing of flood water and sewage, which can be a public health hazard.

Wastewater treatment The study assessed the suitability and cost-effectiveness of the following options:

- a) Anaerobic Baffled Reactor (ABR)
 - b) Bio-trickling filters
 - c) Oxidation Ponds
 - d) Swales with infiltration check dams
- (a) **Anaerobic Baffled Reactor (ABR):** This uses anaerobic biological decomposition and is low cost and requires little routine maintenance. ABRs have been installed in rural Punjab and their operations require simple mechanical one-lever/one-valve steps every 2-3 months. It is typically suited to rural areas with moderate population density. There is no pumping involved so there are no energy costs or energy-linked emissions. There is no requirement for pre-treatment so sewage may be directly piped into a communal ABR. The treatment ensures effluent quality meets national environmental quality standards. The structure of the ABR allows for effluent and residual sludge to be separated and easily extracted. The unit may be connected to a sludge drying bed, so that no

human handling is required before the sludge is inert and dried for reuse. The unit consists of a sealed concrete chamber and its structure and performance are highly resilient to extreme precipitation events and flooding.

- (b) **Bio-trickling filters:** This uses biological treatment and is particularly suited to rural areas with moderate population density. It has low construction costs and may be operated by locally trained persons. While the main responsibility for the maintenance and operation of the bio-trickling unit would be with the service delivery unit, these units require some daily operational tasks which can be performed with minimal training.¹³ They also require less land than conventional ponds, swales, and other rural wastewater treatment setups. The treatment medium is primarily composed of baked clay or a variant. A number of layers of medium are vertically aligned to reduce the land area required and energy costs. The wastewater is pumped to the top from where it trickles through the layers of medium. On average half hour per day pumping is required to lift wastewater from the sump to the rooftop shower arrangement. Low electricity is required which can also be catered through solar panels, on need basis. The treated effluent is designed to meet national environmental quality standards¹⁴.
- (c) **Oxidation Ponds:** Physical and biological aerobic treatment, which requires little maintenance and is considered low-to-medium cost. The historical experience with this technology in Pakistan has been quite poor due to lack of maintenance, where most oxidation ponds became stagnant pools of concentrated untreated waste over time as well as places for the dumping of solid waste. One consideration for this project is an upgrading of the existing stagnant ponds into oxidation ponds and SDUs will take care of periodic O&M needs. Alternatively, stagnant ponds of this type could be cleaned and converted to support water polishing post-treatment, recreational space or rainwater harvesting. This would support the overall objective of creating cleaner and more hygienic villages. Decisions on this will depend on topographic and other site-specific conditions.
- (d) **Swales with infiltration check dams:** This uses physical and biological treatment and the treated effluent can be used for agriculture.

For the vast majority of sample villages, ABRs were deemed to be the most appropriate due to: low construction and O&M costs; no daily operational requirements but one-lever/one-valve mechanical operation every 2-3 months; low land requirement compared to alternatives; and reliably consistent quality of effluent (BOD = 50-55 mg/l) commensurate with provincial and national standards (BOD ≤ 80 mg/l). Given the increasing threat of climate-change-induced flooding, the flood-resilient nature of this sealed concrete structure was a major consideration as it would protect both the infrastructure, and community health by preventing the mixing of sewage and flood water. It is estimated that ABRs will be suitable for 90 percent of the project villages. For the remaining villages, other treatment options will be considered, with a strong preference for Bio-trickling filters. For settlements within villages that are too small and/or too remote to be connected to a centralized ABR, replacement of the current arrangements with a three-chamber septic tank where the third chamber has gravel to act as a filter medium to safeguard groundwater quality, was recommended by the study. A remote settlement can have one communal septic

¹³ This technology has been successfully implemented in rural China in the Zhejiang Rural Water Supply and Sanitation Project, funded by the World Bank.

¹⁴ Bio-trickling Filters have never been tested in Pakistan and the assessment advised that a locally adapted version should be piloted by the project and assessed for future scaling-up.

tank or multiple, depending on the number of and distance between households. Anaerobic baffled tanks will be considered for smaller habitations where environmental parameters of influent are lower, whereas, oxidation ponds will be considered for villages where vast land is available and the soil texture (clay content) makes it feasible.

Sludge management arrangements will depend on the choice of treatment. Where ABRs are used (roughly 90 percent of villages), sludge drying beds will be attached since there is no pretreatment sludge separation or settlement required for ABRs. Sludge and slurry that settle at the bottom of the ABR chamber during the retention period will not require direct handling and will directly flow, via gravity, to the sludge drying bed upon opening of the valve every 2-3 months. Below the sludge drying bed is a perforation system through which the remaining liquid inside the sludge and slurry will trickle down into a gully, and flow to an open-air chamber from where it will evaporate. The sludge on top requires 2-3 weeks to dry and become inert after which it is safe to handle and be used as fertilizer. For villages where ABRs are not used, household or multi-household septic tanks will be provided for pre-treatment sludge settlement and separation. Standard Operating Procedures will be developed for the safe removal of fecal sludge and septic tank cleaning.

Final disposal or reuse: Treated wastewater will either be discharged to the same waterbodies that untreated wastewater is currently discharged to or it will be reused for agriculture. Where it is disposed, Provincial Environmental Quality Standards will be met. Where the treated wastewater is to be applied to land for agricultural production, and no local regulation exists, FAO/WHO or other accredited quality standards will be met.

Non-sewage household wastewater: Where existing household piping assembly allows, wastewater from non-toilet sources (grey water), such as kitchen, shower/bath, washbasins, etc. will bypass the septic tank (where these are at the household level) and join the underground drain after passing through a filter that removes solid kitchen/food waste. In the case of ABR and multi-household septic tanks, all household human waste and grey water will mix in the underground drain and flow to the centralized anaerobic treatment site.

Sub-component 1.2: Water Supply Infrastructure Development (US\$ 157 million).

The study on technology options and their feasibility informed the choice of technology for water abstraction, treatment, and conveyance. The design of water supply schemes was also informed by a study on hydrology and quality of groundwater in the project Tehsils and reliability of recharge of shallow groundwater from multiple sources including irrigation canal seepage. The assessment of technology options and scheme configurations recommended the most feasible options based on source water. The following considerations informed the assessment:

- (a) Water supply systems will ensure protected source points with filtration and disinfection arrangements to ensure WHO¹⁵ recommended quality of drinking water with regular water quality monitoring.
- (b) The systems can include underground supply mains/rising mains, over-head storage tanks, a piped distribution network, and 100 percent metered household connections.
- (c) Rising mains in existing piped schemes may be rehabilitated and augmented to serve more people, if the project's service standards for reliability and quality can be met feasibly.

¹⁵ National and provincial policies of Pakistan endorse WHO standards for drinking water

- (d) Treatment will typically be restricted to filtration and chlorination, except for locations where water quality tests reveal unacceptable concentrations of contaminants that require more sophisticated treatment.
- (e) Estimates of safe yield from locations for groundwater abstraction coupled with the spatial spread of human settlements will determine how many users can be provided water from one abstraction point. The aim is to transition rural areas from multiple scattered and unstandardized abstraction points with no water treatment to consolidated and regulated abstraction points that provide treated water. Access to improved water supply in Punjab is near-universal (98.3 percent), so the water supply infrastructure upgrade will not require additional groundwater withdrawal. Instead, it will increase reliability and quality of water that would otherwise have been abstracted from the same aquifer through private or unmanaged community pumps.

The following options were evaluated by the study to be the most feasible

- (c) ***Skimming wells adjacent to main or branch canals:*** This system was given the highest priority due to its cost-effectiveness and good prospects for sustainability. It is expected that most of the water supply interventions will be based on wells that pump groundwater from or close to the banks of irrigation canals. Where feasible, wells will be installed along main and branch canals. The rationale is that these canals are not lined, not subject to rotation, and therefore, provide sufficient recharge to maintain the freshwater lens which the water supply system will draw from. Unlined distributary or minor canals may be considered where main and branch canals are at substantial distances from villages¹⁶. It is estimated that the drinking water needs of about 25,000 existing users in the vicinity of such canals can be met from a single abstraction location, thus eliminating the need for private pumping by individual households and communities.
- (d) ***Direct pumping of groundwater from unconfined aquifers:*** For villages that cannot be served by canal-bank abstraction points and have fresh groundwater available, direct pumping from the unconfined aquifer is recommended, replacing the current arrangement from multiple private wells. For small and scattered settlements, community water-dispensing stand-posts will be installed. In such cases the risk of contamination between source and point-of-use will be higher and the behavior change component of the project will be more robustly implemented.

Potential options for villages (or settlements within villages) that don't qualify for options (a) or (b) include:

- (c) ***Skimming wells adjacent to irrigation watercourses:*** These schemes will be able to provide communities with a limited amount of water intended for drinking purposes. Seepage water from watercourses will be pumped using shallow borehole(s) and supplied to community water tanks, from which community members will be allowed to draw a rationed allowance through water-dispensing stand-posts. It is likely that most small and remote settlements will be covered through these schemes.
- (d) ***Reverse Osmosis:*** This option has the highest capital cost per unit water provided, as well as high O&M costs. It will be considered only for those villages in the project area that cannot be provided water through any of the above options due to ground water salinity levels. In such cases, the project may

¹⁶ Overall, some 60 percent of the 22,000 or so villages in Punjab, are within easy reach of a perennial canal source.

work with other institutions in Punjab, specifically the Aab-e-Pak Authority, which is expected to specialize in such systems.

3.3.2.Component 2: Behavior Change and Capacity Development (US\$ 15.4 million)

This component will finance activities that facilitate and induce health protective behavior change and build community capacity to support WSS service delivery. The component will focus on providing residents of villages with information on the health and environmental impacts of poorly managed water and sanitation, and household and community behaviors that exacerbate these impacts. It is expected that once communities understand the cost to them of the current widespread poor water hygiene practices (cost of health care; lost income due to illness and the health of their children), their willingness to adopt universally safe water and sanitation practices under the project will be enhanced, as will their willingness to pay the tariff required for sustainable delivery of safely managed water and sanitation. Changing deeply ingrained practices around water handling and the handling of waste etc. at the household and community level will require a sustained effort. Global evidence from rural water supply and sanitation projects has repeatedly demonstrated the ephemeral impact of one-off messaging around behavior change. The project will train women in the village to become agents of change working with NGOs that have a demonstrated record of success with community mobilization as partners in this process. There is good evidence from rural Pakistan that social mobilization efforts focused on inducing the participation of women in village decision making have large payoffs on their own empowerment but also create important knock on effects on WASH related behavior change, on the performance of public service providers and on the allocation of public budgets on priorities identified by women. This evidence is discussed below in the analytical underpinnings section of the document.

Subcomponent 2.1 Awareness raising and behavior change related to COVID-19 and safe WASH practices (US\$ 8.3 million)

The project will support COVID-19 mitigation measures in rural Punjab through a series of measures. The focus will be on: (i) actions that households and communities can take to ensure physical distancing and basic hygiene, (ii) small-scale infrastructure to directly promote good hygiene practice and (iii) enhance jobs for unskilled and semi-skilled labor. A large fraction of rural households works in the non-farm sector, largely in small towns in surrounding urban and peri-urban areas. Some also work as temporary or permanent migrants in large metropolitan cities like Lahore and Karachi that have been hit hard by COVID-19. Due to the slowdown of economic activities in these large cities, transport networks have also been hit hard leaving many in the rural hinterland and in small towns underemployed or unemployed. Proposed activities include:

- (e) Communication campaigns on social distancing and hygiene practices and the risks of COVID-19 and other infectious diseases. These will be delivered through mobile phones, radio, and posters and in person once it is possible to do so in a safe and responsible manner.
- (f) Low cost external entry way hand-washing stations in public areas to prevent spread of infection. These will include bus stations and other transport hubs, schools, rural health clinics, government offices at the Tehsil level etc.
- (g) While the project infrastructure is under construction, the project will support, on an urgent basis, the widespread adoption of the point of use (POU) treatment of water with chlorination-which is effective at eliminating pathogens, including COVID-19.
- (h) Job creation within villages by using local labor for the construction of hand-washing stations and the

monetization of community participatory tasks related to rainwater harvesting, backyard kitchen gardening, animal and solid waste management, water quality management, and sanitation and hygiene promotion in shared village spaces.

Information campaigns will be designed and implemented to increase communities' knowledge of and ability to sustain safely managed water and sanitation, with the objective of preventing fecal-oral transmission, through the five pathways: field, flies, fingers, fluid, and food. The structure of the campaign will be based on key messages regarding:

- (a) personal/household and community water management, sanitation, and hygiene practices that contribute to environmental contamination.
- (b) short-run and long-run consequences of identified practices on health, including the economic burden of identified health concerns;
- (c) behaviors that can safeguard households and communities against contamination and protect village water and soil resources.
- (d) The potential of sustainably managed groundwater – protected from fecal contamination and over-abstraction – to serve as a buffer for the community during periods of drought.

Some content will build upon existing behavior change campaigns in rural Punjab on ending open defecation and the centrality of good handwashing practices and will reinforce their messages. New content will be developed for behavior modification required for infrastructure investments (Component 1) to deliver higher-level health outcomes. This will include household/community practices for safe animal waste management, safe solid waste management, kitchen drain filter cleaning, and where applicable, use of treated wastewater for agriculture. Information on cellphone-based participation in data generation and grievance registration will also be included.

Campaigns will focus on women, who will be expected to amplify this message to their households and neighborhoods, and children who will receive this through school sessions and activities. Campaigns will be developed to be catchy, memorable and accessible to people in low literacy contexts. The app-based entry of complaints will also be designed to be simple and accessible. It is expected that Tehsil Councils, with support from NGOs, will take the lead in implementation and may also seek the support of the Social Welfare Department at the tehsil level.

Subcomponent 2.3: Training and Capacity Building of Village-level Institutions (US\$ 7.2 M)

Trainings will target village-level institutions that have a defined role in water and sanitation service provision. These will be complemented by household behavior change but are distinct, in that they will build the capacity of informal village level organizations to perform tasks that both complement and supplement the O&M responsibilities assigned to Service Delivery Units (SDU).¹⁷ Areas for capacity building will include:

- (i) Solid waste collection and separation for composting, recycling and the safe conveyance of residual waste, with a focus on observational monitoring to ensure that all waste is safely managed for resource recovery and that fecal waste is not entering any part of it;

¹⁷ The training program may be reoriented to focus on Village Councils during the latter half of the project, if needed. Village Councils have been created under the Punjab Local Government Amendment Ordinance 2021. The implementation of this part of the Act/Ordinance– namely the holding of elections to Village Councils and the setup of a mechanism for transfer of public funds to them - is currently in its initial stages and is unlikely to make sufficient progress during the first two-three years of project implementation. The project team will assess the status of VCs during the project's MTR and, if they are functional by then, support their capacity building to enable them to execute their role in water supply, sanitation, wastewater management and solid waste management, as envisioned by the Act/Ordinance.

- (j) Animal waste management, including the guidelines around babyWASH;
- (k) Regular monitoring of fecal waste management infrastructure – septic tanks, sewerage system, and locations where wastewater is treated - to ensure no malfunctioning or leakage takes place and the village environment is free of contamination.
- (l) Regular monitoring of water delivery infrastructure – storage tank, chlorinator, water pump, etc. - to ensure there are no leakages, contamination, and malfunctions;
- (m) Protocols for reporting issues to relevant Tehsil bodies and customer complaint management;
- (n) Coordination with and request support from the Tehsil SDU;
- (o) Community outreach and social awareness, with a focus on the engagement of women, in coordination with the Social Welfare Department and/or NGOs;
- (p) Data entry for MIS (Subcomponent 3.2)

3.3.3.Component 3: Service delivery Improvement (US\$ 50 million)

Subcomponent 3.1: Establishing institutions and building capacity for service delivery (US\$ 2.4 million)

The service delivery model of the project consists of three tiers: (i) a provincial SDU head office that has functions of both, the Project Implementation and Management Unit (PIMU) as the implementing body of the project and a public-owned section 42 company as the apex body of tehsil units that will become self-sustainable financially and remain a permanent institutional arrangement for O&M of rural water supply; (ii) Tehsil level units that are on frontlines of service delivery; and (iii) Community Caretakers and Operators (CCO) that may be part of Village Councils, Village Organizations, or just village residents.

Subcomponent 3.2: Solid Waste and Animal Waste Management (US\$ 43.9 million).

Promoting the safe handling of solid waste is an integral aspect of the design of this project. Solid waste is an important channel of fecal-oral contamination in rural Punjab. It is common practice to dispose fecal waste from babies and young children in household solid waste, which is typically dumped within or near human settlements. The poor handling and disposal of solid waste exposes this fecal matter to the environment and enables transmission of pathogens through various channels, most notably through flies. Household food waste and left-over green waste is also added to these waste piles leading to the release of methane and nitrous oxide. The handling of solid waste also has serious consequences for the safety and sustainability of water resources. The common practice of dumping household solid waste randomly in piles (such as on the roadside at the outskirts of villages), and in or near canals and ponds, contributes to the contamination of groundwater and surface water. Unseparated solid waste often contains chemical and pharmaceutical waste which, through leaching by rainfall, can contaminate groundwater. The presence of solid waste in surface water also limits the use of water resources for domestic and agricultural purposes unless filtration and treatment investments are made. Solid waste also clogs up the inlets/outlets of within village water outlets and storm drains. Waste accumulations during low-flow periods reduce the discharge capacity of storm drains, increasing vulnerability to flooding in rural settlements in the event of extreme rainfall events.

Solid waste is also a major contributor to Pakistan's GHG emissions. The broader waste sector released 4.79Mt (CO₂ equivalent) of Methane and 4.27Mt (CO₂ equivalent) of Nitrous Oxide in 2017¹⁸. Solid waste was the biggest contributor to this while municipal and industrial waste were the second biggest. It is difficult to deduce the rural contribution to solid waste in Pakistan. From the limited research on rural solid waste generation in Punjab, it can be deduced that on average a rural household produces 61 kg of solid waste and a typical village produces about 23,500 kg per month. Of this, 64 percent is biodegradable and suitable for composting; 18 percent is recyclable; and 18 percent is residual waste that requires safe disposal.

In the case of PRSWSSP there are multiple concerns around solid waste which threaten to undermine the investment of the project:

- (a) There is no waste separation at the household or village level.
- (b) Households dispose infant fecal waste (through diapers or directly) into solid waste.
- (c) There is no regular waste collection which leads to accumulation of waste around/in settlements. In case there are water bodies/channels in the village it is common practice for waste to be dumped along the banks or directly in the water.
- (d) Even though solid waste collection and disposal is a local government responsibility, there are no mechanisms currently in place for its execution as a regular public service

The project intends to improve solid waste management against the following objectives:

- (a) **Promote separation and safe disposal of solid waste:** The key activities include minor infrastructure provision backed by robust behavior change.
 - (i) Households will be taught the difference between food/green waste (compostable), recyclables, and residual waste and nudged towards sorting and disposing them through appropriate channels. The project will provide 2 waste bins to each household to collect and secure compostable and residual waste in respective bins till it is collected by a designated sanitation worker. The bins will be constructed from recycled plastic by manufacturers in Punjab that are already operating plastic recycling units. Since recyclables will not be collected by sanitation workers, the household will be nudged towards safe storage in boxes, cabinets, etc. till they are picked periodically by hawkers. The behavior change campaign will also stress the importance of keeping fecal waste (from animals and humans) separate from residual waste. There will also be emphasis on ensuring that chemical and pharmaceutical waste is restricted to residual waste.
 - (ii) The SDU will hire two sanitation workers per village to collect compostable waste and residual waste from households routinely. Compostable waste will be taken to a central composting site within the village and the sanitation workers will be trained to compost this. This is expected to reduce methane and nitrous oxide emissions. The residual waste will be taken to a transit site that will be constructed to ensure there is no direct exposure to rainfall or flooding and consequent leeching to groundwater, before it is picked up from the village for final disposal at a central Tehsil solid waste site

¹⁸ Data source: CAIT, <https://www.climatewatchdata.org/data-explorer/historical-emissions?historical-emissions-data-sources=cait&historical-emissions-gases=All%20Selected%2Cch4&historical-emissions-regions=All%20Selected%2CPAK&historical-emissions-sectors=total-including-lucf%2Cwaste&page=1>

- (iii) The project will support procurement of 2-3 trucks per tehsil for residual waste collection from village transit sites. The SDU will be responsible for operations and may outsource contracts for solid waste management services to private sector service providers.
 - (iv) Village organizations (VO) will be trained to undertake routine random spot checks to ensure households are complying with the practice of waste separation. The SDU-supported sanitation workers will also support monitoring of household behavior. Where waste is found to not be properly separated and disposed, VO officers are expected to call neighborhood meetings (townhall format) or visit the specific households. The ambition is not to penalize households but to keep channels for behavior change open.
- (b) **Facilitate recycling of waste:** It is common practice in rural Punjab for hawkers to periodically collect (or purchase) metals, paper, plastic, and glass from households and sell them in bulk to small production units and factories. Where this informal arrangement does not exist, the VO will ensure that a few such hawkers are engaged to collect recyclables. The new hawkers will be local residents who will be provided an orientation training to become part of the income-generation activity. It is estimated that on average a village in Punjab generates PKR 60,000 worth of recyclables that have accessible markets in the province.
- (c) **Prevent disposing of waste in water bodies:** Regardless of what the frequency of residual waste pick-up is, the project will ensure that the transit site is not in the vicinity of any surface water body, in a shallow groundwater region or in a site that is likely to be flooded due to heavy rain or monsoon flooding. The composite impact of improved solid waste management will be a substantial reduction (or elimination) of solid waste inside settlements, which clogs storm water drains and increases impact of flooding by preventing flood water from being drained. Ensuring that village drainage is functioning at its peak capacity year-round is critical as flood events are projected to become more frequent and less predictable due to climate change.

The solid waste management activities will be among the first activities to be implemented and monitored for progress. It will serve as a measure of both the effectiveness of the first round of behavior change and the readiness of the village residents and VO to play their respective roles in maintaining village hygiene.

Poorly managed animal fecal waste is also a major source of bacterial contamination of the environment. In rural Punjab, it is common for households to own and/or keep ruminants and poultry inside or adjacent to dwellings which leads to a concentration of animal waste very close to humans. Below are some examples of how practices around animal management in rural Punjab lead to this waste being ingested by humans (especially infants and young children):

- a) Babies crawl and children play in the same areas where animals defecate.
- b) Homemakers (typically women and girls) are responsible for the care of animals-their bathing, feeding, and milking, as well as the management of their waste animals which leads to contamination of hands, bodies, shoes, and clothes by animal waste. There is also a lack of attention to handwashing and sanitizing/changing of shoes and clothes after such activities which transmits the bacteria to inside the house and kitchen, finding its way to utensils, food, water, etc. This also transmits bacteria to infants and children when the caregivers handle them without first sanitizing their hands and clothes.

- c) Milking of ruminants usually involves washing the udders but the presence of fecal waste in the surroundings keeps the likelihood of the fresh milk getting contaminated high. In the case of large ruminants, fecal waste is often found on tails from previous defecation events and the rapid swinging of tails during milking can fling the waste into the milk, and onto shoes and clothes.
- d) Reusing animal waste for energy generation, thermal insulation of houses, and as manure is common. This involves direct handling of waste. The lack of attention to hygiene practices again brings the bacteria into households and enables transmission through multiple fecal-oral routes.
- e) Lack of proper covered disposal/storage of animal waste also leaves it open to transmission through flies and other insects. This continues to be a problem even where animals are kept away from the house in a communal enclosure, but no attention is given to safe disposal or storage of waste.

These behaviors and practices around animal waste management can potentially jeopardize the intended health outcomes from WASH investment, including through PRSWSSP. Safeguarding community health outcomes requires building a robust and comprehensive behavior change and communication campaign around the management of livestock, complemented by minor infrastructure. This will likely include pilot activities to generate the evidence needed for mainstreaming approaches which have either not been tested elsewhere or which need to be customized for the specific context of Punjab, Pakistan.

The project will support behavioral change with minor goods/equipment to improve animal waste management at the household level. Given the widespread use of animal waste for fuel and manure, safe handling at the household level will likely be the option preferred by most owners of livestock. However, subject to community willingness, the project will pilot communal management of animal waste to produce manure for agricultural use. Many of the fecal-oral routes can be disrupted by robust and recurring behavior change and communication efforts and complemented by trainings for village-level institutions. These include:

- a) Separation of areas where animals are kept from areas where infants crawl/play. This can include a light, movable playpen for children that is easy to wash, and a means of separating and cordoning animals to one section of the house to reduce spread of fecal waste. The infrastructure requirements to operationalize this separation will be supported by project for the poorest households.
- b) Protocols for handwashing after handling animals as well as the cleaning of shoes and the protection of clothes.
- c) Equipping households with plastic or wooden scoopers for removal of waste.
- d) Tarp sheets to cover animal waste that is stored outside for drying. This is to reduce the spreading of pathogens through flies.
- e) Adjustable plastic visors that can be wrapped around milk bucket. These can be designed to provide coverage around three-fourth of the bucket's circumference, leaving one-fourth space for milking.

NGOs in Punjab are also working with village communities on the collective management of waste (both solid waste and animal waste) to create cleaner and healthier villages. The project will work with such NGOs to build capacity in project villages and in Tehsil Councils.

Subcomponent 3.3: Water Quality Monitoring (US\$ 3.8 million)

The project will support a transition in Punjab towards regular and frequent water quality monitoring in rural areas for both drinking water supply and wastewater.

3.3.4. Component 4: Project Management and Monitoring (US\$ 14.4 million)

Subcomponent 4.1: Project Monitoring through a customized Management Information System (US\$ 1.3 M)

The project will develop and use a comprehensive IT based Management Information System (MIS) to track project implementation progress, WSS service delivery performance, the flow of public and donor funds earmarked for WASH and related financial management information, and outcome indicators.

Subcomponent 4.2: Strengthening of Project Implementation and Management Unit (PIMU) (US\$ 13 million)

The key implementation tier will be the Project implementation and management unit (PIMU), which will be associated with the Department of Local Government and Community Development (LG&CD) – the implementing agency - and led by a full-time Project Director.

3.4 Project Cost and Timeframe

Project Cost and Timeframe is given below:

1. Project Cost 500.00 US\$M

3.5 Implementation Arrangements

Following will be the implementation arrangement under the Project.

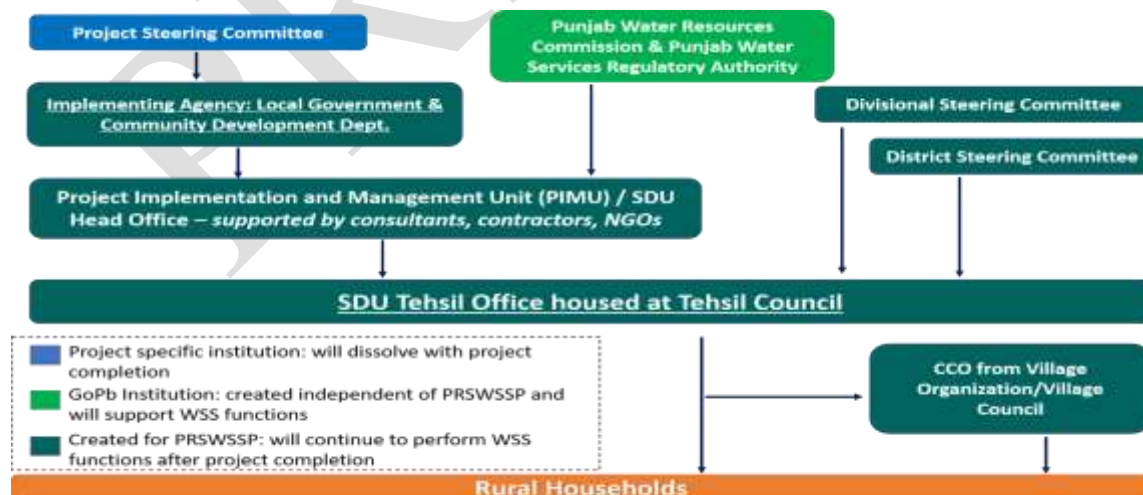


Figure 9: Project Implementation Arrangement and transition to post-project service delivery

CHAPTER 4 EXISTING BASELINE CONDITIONS

This section of ESMF presents a broader picture of the existing environmental and social conditions that include physical, biological and socio-economic environment of project districts of Punjab that are:

Table 3: PRSWSSP Districts

1.	Khushab	2.	Bhakkar	3.	Rajanpur,	4.	Bahawalpur
5.	Mianwali	6.	Pakpattan	7.	Rahim Yar Khan	8.	Muzzafargarh
9.	Sargodha	10.	Chiniot	11.	DG Khan	12.	Bahawalnagar
13.	Chakwal	14.	Jhang	15.	Lodhran	16.	Multan

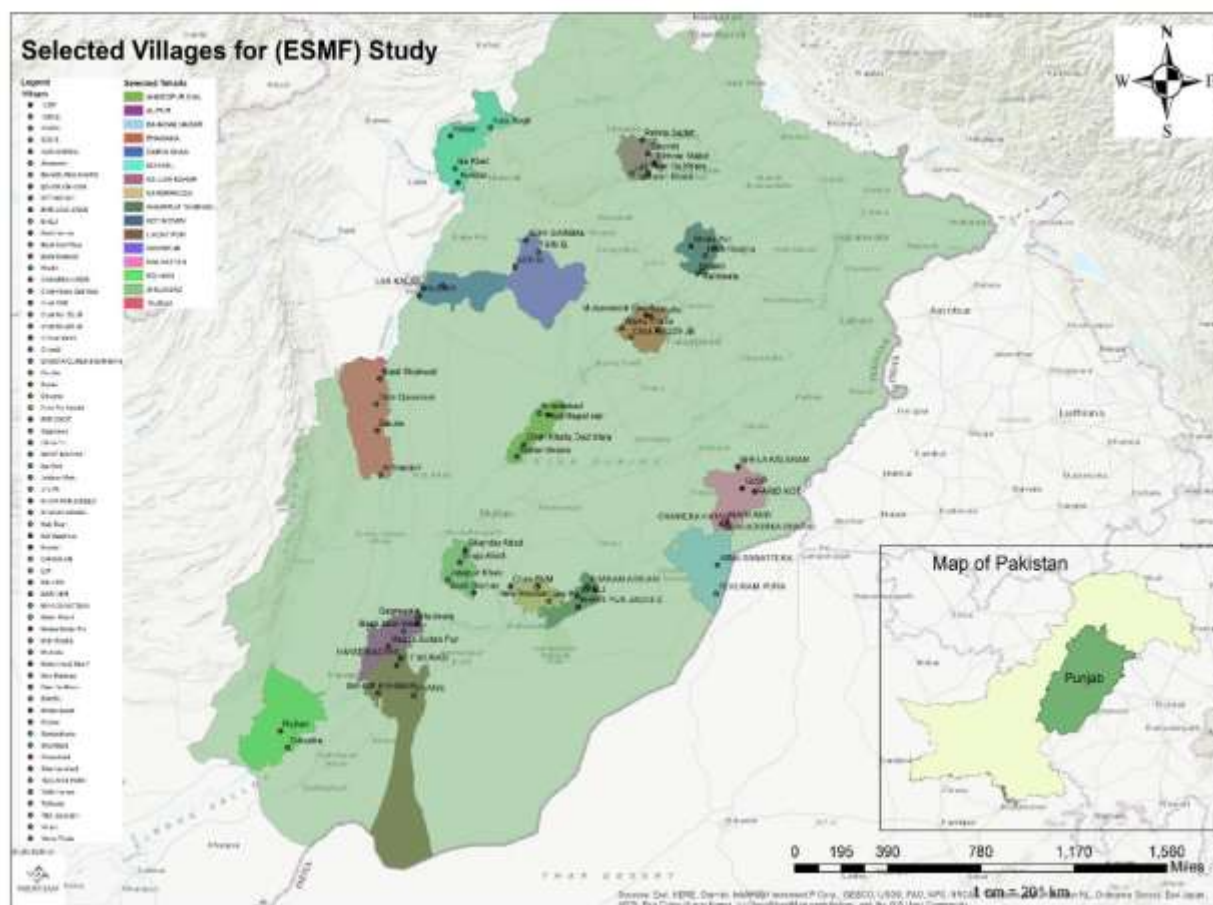


Figure 10: Selected Villages for ESMF baseline study

4.1. Methodology of Baseline Data Collection

For **primary data collection**, a total of 64 villages from 16 districts were selected to capture the diversity of project districts in term of their geographical location (north, south, central), topography (plain or hilly), agricultural land or desert area, compact or scattered population, established villages or villages with poor infrastructure. Profile of each village has been developed during the site visits depicting varied baseline conditions.

Out of 64 villages around the distribution of villages was: 21 established villages and agricultural, 7 villages with chunks of uncultivated land, 12 villages along water bodies, 11 villages with spontaneous population, 7 villages with desert areas and 6 hilly villages.

For **secondary baseline data collection**, latest available data from national and international publications, journals and reports is gathered, analyzed and used accordingly.

4.2. Baseline Conditions of PRSWSSP Tehsils/Districts collected by Secondary Data

4.2.1. Physical Environment

The physical environment of Project Tehsils describes the physical characteristics and condition and will be given in this study. The physical characteristics given in this section include: soil characteristics, hydrology (surface and ground water), seismicity, climatic conditions, geology, topography, water quality and noise. Physical characteristics of study area are given as:

4.2.1.1. Topography

Topographically, most of of project district spreads mainly on plains, with some mountainous and hilly areas on the northwest and southwest extremes and sandy desert in the southeast.¹⁹ It stretches from north with tehsils like Kallar Kahar which lies on elevation of 554 m to south where elevation of areas reaches 1972 m in DG khan. There is also a plateau adjacent to the mountains known as the Potohar plateau and a desert belt in the South Eastern part known as Cholistan desert²⁰.

¹⁹ Forest and Biodiversity information Report-UNDP

²⁰ The Punjab Province- FAO

Table 4: An overview of topography and geographical characteristics of Project Districts²¹

District	Tehsil	Topography	Geography
Mianwali	Isa Khel	A hilly terrain in the north, north-east and south west A firm clay plain falling in front of Salt Range and Dhuk hills, a sandy plain in the centre and the south. The mountainous area has many steep hills, gorges, deep ravines, nullahs and streams. Cultivation in this area is possible on the hilly slopes, flat hill-tops and along the beds of torrents.	District Mianwali is bounded by district Attock on North-East, Chakwal and Khushab districts on East and Bhakkar on South and NWFP on its West and North-West. River Indus flows across the district from North to South. Three branches of the Thal Canal Emerging from Jinnah Barrage on river Indus near Kalabagh irrigate the vast areas.
Khushab	Noorpur Thal	Khushab lies in flat agricultural territory immediately south of the Salt Range, marking the end of the Pothohar Plateau and the start of the Punjab plains. Khushab is a place where desert meets mountains. According to the topography of the soil this district is divided into the circles namely; Pahar, Mohar Barani, Mohar Nehri, Thal Nehri, Thal Barani.	Khushab is situated between the cities of Sargodha and Mianwali, near the river Jhelum. Six Districts are linked with this district, Sargodha is located on East, Mianwali on West, Chakwal & Jhelum on North and Jhang, Bhakkar on South of this district.
Bhakkar	Darya Khan	Its area consists of a riverine tract along the Indus, called Kaccha, and most of the district area lies in the desolate plain of the Thal desert. The district is of semi rectangular shape and mostly consists of sandy land.	Bhakkar is situated between the Indus River and Chenab. The total area of the district is 8153 kilometers. It is 134 kilometers long from North to South and 60 kilometers wide from East to West.
Bahawalpur	Khairpur Tamewali	The district Bahawalpur topologically can be divided into three parts i.e. the riverian area, the plain area and the desert area. The area is inundated during floods. The irrigated track is higher than the riverian area. It lies to the south and east of the irrigated track and north of the desert of Bikanir and Jaisalmer of India	The district forms one of the southern parts of the Province of Punjab and is situated almost in the center of the country at the eastern border at an elevation of 152 meters from the sea level. The average length from north to south is about 178 kilometers and breadth from east to west is 139 Kilometers
Rahim Khan	Yar Liaquatpur	This district is divided into three main physical features i.e. (a) Riverine area. (b) Canal irrigated area and (c) Desert area which is called Cholistan. The Riverine area of the district lies close on the southern side of the Indus river mainly falling in the river bed.	The district borders with Muzaffargarh district on the north, with Jaisalmer (India) and Ghotki district of Sindh province on the south, with Bahawalpur district on the east, and with Rajanpur district on the west.

²¹ Districts-Punjab Portal

Bahawalnagar	Bahawalnagar	The district may be divided into three parts. These are the riverain area, the canal irrigated plain and the desert area. The riverain area of the district lies close to the Satluj River which flows in the North-West along its border with Okara, Pakpattan, Sahiwal and Vehari districts. The land in this area is irrigated by non-perennial canals.	The boundaries of Bahawalnagar in the East and South touches the Indian territory while Bahawalpur district lies on its West and river Sutlej flows on its Northern side. District Bahawalnagar spreads over an area of 8878 square kilometers
Pakpattan	Pakpattan	The main land form units which exist in the Pakpattan canal command area are: Recent Flood Plain, Sub-Recent Flood Plain, Miscellaneous Land Types Recent Flood Plain covers about 12% of canal command area. It lies along the right bank of river Sutlej as a continuous strip and along the left bank of Sukh Beas in discontinuous patches. It is partly subjected to inundation during high floods.	Pakpattan, a largely rural district, is situated in central Punjab and surrounded by Sahiwal District to the northwest, Okara District to the north, Sutlej River and Bahawalnagar District to the southeast, and Vehari District to the southwest. Its distance from the provincial capital Lahore is 207 km.
Multan	Shujahabad	Multan is located on the bank of Chanab river in the southern part of Punjab province and almost in the central part of Pakistan. There are two big deserts i.e Cholistan and Thal in Multan diocese. Vast plain ground dissected by rivers, canals and narrow water channels.	Latitude and longitude coordinates are: 30.181459, 71.492157.
Rajanpur	Rojhan	The elevation of study area generally ranges between 15 and 45 m above mean sea level. It slopes towards the Indus River which runs along the eastern boundary. There are small sedimentary hills in the western and southwestern side that rises to an elevation of about 100 meters. The western side is gravel plain with very little natural vegetation cover. The eastern half is the part of the Indus River flood plain.	It is one of the only two districts of Punjab located west of the Indus River. The land is sandwiched by river Indus on one side, while the Suleiman mountains range on the other. According to the National Census Report 1998, it had a population of 1,103,618 of which 14.27% were urban.
Muzaffar Garh	Ali Pur	The eastern portion of the district is consists of Thal desert, while small portion of the district has a forest cover lying along the river Indus. The district is linked with all major cities through network of major roads.	Muzaffargarh spreads over an area of 8,249 km ² and forms a strip between the Chenab River on its east and Indus River on its west, which pass along the Eastern and Western boundaries respectively of the district and a triangle at Alipur tehsil of the district. The district is bounded on the north by district Layyah, on the south by Bahawalpur and Rahimyar Khan districts across the river Chenab.

Dera Khan	Ghaz	Taunsa	The topography of the Dera Ghazi Khan district is dominated by the mountains and hills of the Sulaiman range which runs mostly in a north–south direction in the eastern portion of the district. The off–shoots of the Sulaiman range run, across the district, in a northeast southwest direction. From east to west the mountains ranges are the Phulali, the Sukha Daula, the Jandaran and the Karwadda ²²	Located in a strip between the river Indus and the Koh-e-Suleman range of mountains separating it from the Baluchistan Province. It is surrounded by Dera Ismail Khan on the North and Rajanpur on its South. Indus river flows on the East across which lie the districts of Muzafargarh and Layyah. The district is spread over an area of 11,294 square kilometers
Jhang		Ahmad Pur Sial	Active flood plains are narrow strips along the river and its tributaries. The plains are inundated almost every year, covered with rich alluvium and are suitable for agriculture. Subrecent flood plains also called alluvial terraces are depositional and are separated from the adjoining active flood plains by the river cut bluffs ranging in height from 1m to 5m.	The district is bounded on the north by Sargodha and Chiniot districts, on the south by Khanewal district, on the west by Layyah, Bhakkar and Khushab district, on the east by Faisalabad and T.T Singh districts and on the south west by Muzaffargarh district.
Chakwal		Kallar Kahar	The Chakwal district has unique geological features comprising of undulating topography of Potohar plateau and fairly level plains in Chakwal, Talagang and Lawa tehsils ²³	Geographically it is located in the Pothohar Plateau of Punjab, Pakistan. Chakwal district is bordered by Khushab to its south, Rawalpindi to its north east, Jhelum to its east, Mianwali to its west and Attock to its north west
Sargodha		Kot Momin	Sargodha mainly comprises flat, fertile plains, although here are a few small hills on the Sargodha-Faisalabad Road. The River Jhelum flows on the western and northern sides, and the River Chenab lies on the eastern side of the city ²⁴ .	The town's overall size is 155km ² in length
Chiniot		Bhowana	The Topography of the area is plain but from 7 km from City center there is small mountains near the Chenab Rivers	It is located at the intersection of the Faisalabad-Sargodha and Lahore-Jhang roads. It is 158 kilometres north-west from Lahore and 38 kilometres North of Faisalabad.
Lodhran		Karor Pacca	The district of Lodhran is situated on a smooth plain and consists of three tehsils: Dunyapur, Kahrora Pakka, and Lodhran (district headquarters)	District Lodhran is district of the Punjab province with Latitude 29° 32' 16.67" North and Longitude 71° 37' 41.64" East. Its area is 2778 Sq. Km

²² Asian Development Bank

²³ Sustainable forest management Project-Chakwal forest division

²⁴ Global Precipitation Measurement Mission-Sargodha District

4.2.1.2. Geology

Punjab's area mostly consists of an alluvial plain formed by the southward-flowing Indus River and its four major tributaries in Pakistan, the Jhelum, Chenab, Ravi, and Sutlej rivers²⁵. The general slope of the land is from northeast to southwest, but it rises in the areas between rivers. Approximately 70 percent land area of the province comprises flood plains 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 silt²⁶. 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.

4.2.1.3. Climatic Condition

After reviewing various reports, articles and case studies it has been found that Project tehsils like Chakwal, Mianwali etc located in northern region of Punjab receives more rainfall as compared to southern while humidity decreases from north to south. The following table gives an overview of climatic conditions of project tehsils²⁷:

Table 5: Climatic Conditions of PRSWSSP Districts/Tehsils²⁸

#	Punjab	Tehsils	Temperature	Rainfall/precipitation	Climatic conditions
1	NORTH	Noorpur Thal	There is a high temperature in summer which rises 40°C very frequently.	The annual average rainfall is 186mm.	Climate of area falls under "arid" category. The climate characterized by low rain, high temperature, low relative humidity, high rate of evaporation and strong summer winds
2		Isa Khel	The highest recorded temperature in summer is 52°C; in winter, the average temperatures can be as low as 3 to 4°C.	The rainy season starts in July and ends in September. The average rainfall in the district is about 385mm.	It has an extreme climate, with a long, hot summer season and cold, dry winters; most parts of the Tehsil are arid

²⁵ Tourism Development Corporation of Pakistan

²⁶ Disaster and Climate Resilience Project- Government of Punjab

²⁷ Climate Change Profile of Pakistan – Asian Development Bank

²⁸ Climate Change Profile of Pakistan – Asian Development Bank

					to semi-arid characterized by four seasons in a year
3		Kot Moman	The average annual temperature is 41 C observed in June.	The average annual rainfall detected is 79.9 mm.	moderate.
4		Kallar Kahar	The temperature observed hottest days reaches 45 C.	The average rainfall occurs in between 44 mm-84 mm.	Sunny and cloudy
5	CENTER	Darya Khan	The maximum temperature reaches 44 C and minimum temperature reaches 1 C.	More rain occurs in August. Winter rain occurs in January to March.	Arid- semi arid
6		Pakpattan	The temperature on hottest days is 49 C.	The maximum rainfall recorded is 67 mm.	Dry and arid annually
7		Bhowana	The monthly average temperature is in between 44 C-34 C.	The maximum rainfall occurs in the month of August that is 34.5 mm.	Dry
8		Ahmadpur Sial	The maximum annual recorded temperature is 46 C.	The maximum annual recorded rainfall is 80.2 mm.	Moderate
9	SOUTH	Rojhan	The temperature in hottest days is 49 C and in coldest nights is 25 C.	Generally, there is negligible rainfall but occasionally heavy rainfall occurs.	Dry and arid
10		Liaqatpur	The temperature is hot and dry in summer whereas cool in winter.	Generally, there is little rainfall.	Dry and arid.
11		Taunsa	The summers are humid and sweltering whereas winters are cool.	The maximum rainfall occurs in the month of July is 1.5 inches. There is a seasonal variation in average rainfall.	Dry overall.
12		Karor Pacca	The minimum temperature in winter is 5 C whereas in	There is an average rainfall of 71mm and most rainfall occurs	The climate of the region is hot and dry during summer and

			summer, it reaches 42 C.	during the monsoon in July and August.	cold during the winter.
13		Khairpur Tamewali	The average temperature in summer remains in between 40-50 C, and in winter it is between the 5-15 C or below it.	The rainfall of the area is low due to the fact that it is adjacent to desolate desert.	The climate of the area is hot, dry and arid being adjacent to Rajputana desert.
14		Alipur	The temperature prevails hot during May to September but cool breeze starts during mid-August.	The average rainfall occurs as 45, 32 and 11mm respectively.	The climatic condition is dry or arid.
15		Bahawalnagar	The average temperature falls in between the tropical to warmth that is 28 C-34 C.	Rainfall occurs mostly in monsoon season from June to August.	It has a hot desert climate with hot summers and mild winters.
16		Shuja Abad	The day temperature is very hot that is maintained by cool temperature at night.	Rainfall is observed mostly in monsoon season.	The climate is arid with hot summers and cold winter.

4.2.1.4. Natural Hazards

The province of Punjab is vulnerable to most kinds of disasters, with particularly river flood and hill torrents frequently occurring since 2010 due to climatic changes²⁹. There have also been examples of tornadoes and earthquakes in the province but their frequency have been quite low.

Table 6: Disaster occurrence in Project Tehsils/Districts

Disaster Type		Vulnerable Districts/ Areas
Riverine Flooding	Indus	Mianwali, Bhakkar, Layyah, Muzaffargarh, DG Khan, Rajanpur, R.Y. Khan
	Jhelum	Jhelum, Khushab, Jhang
	Chenab	Sargodha, Chiniot, Jhang, Multan
	Sutlej	Pakpattan, Lodhran, Bahawalnagar, Bahawalpur
Flash Floods		Mianwali, D.G. Khan, Rajanpur
Droughts		The areas of Cholistan in district Bahawalpur, Bahawalnagar and R.Y. Khan

²⁹ Provincial Disaster Response Plan – Provincial Disaster Management Authority

Floods

Pakistan has experienced deadly flood in 2010, which affected fifth of Pakistan's area, and around 20 million people got affected.³⁰ The disastrous flood of 2010 along the Indus River began in July with heavy monsoon rainfall and rapidly affected approximately one-fifth of Pakistan's total land area.³¹

It has been confirmed through various reports that most of selected project tehsils are more vulnerable to floods and had faced floods in 2010, 2012, 2014 are Darya Khan (Bhakkar), Isakhel (Mianwali), Bahawalpur, Bhowana (Chiniot), Tausa (DG Khan), Rajanpur (Rojhan), KotMomin (Sargodha). All of above mentioned tehsils were visited by ESMF Consultant and through community consultation it has been found that the villages have been affected by monsoon floods and damages agricultural land.

Seismicity

The level of seismicity of Punjab ranges between low to moderate, the province has been divided into five zones as per severity according to Punjab building bye laws.

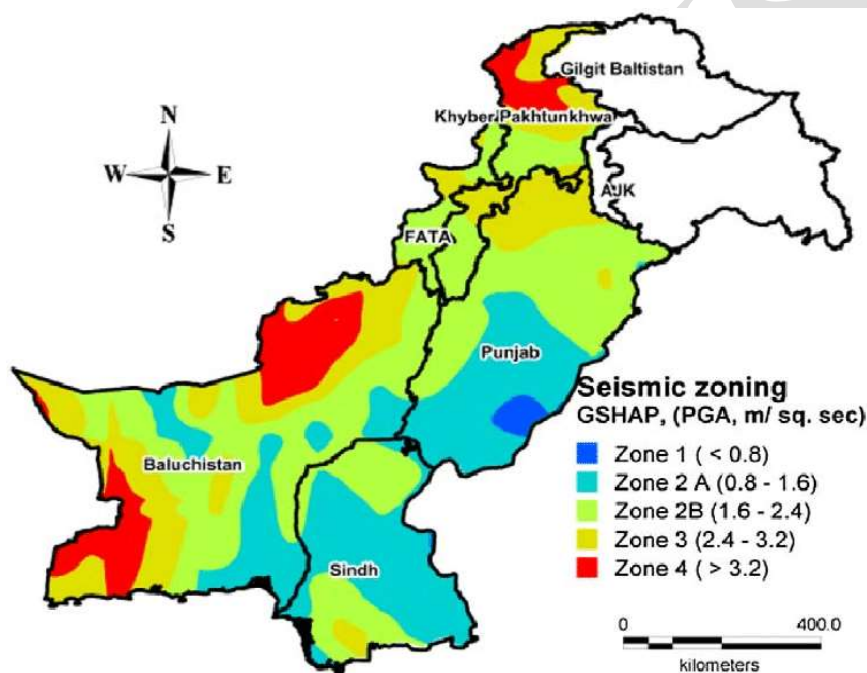


Figure 11: Seismic Zoning of Pakistan

It has been found that most of project tehsils which includes: Rojhan, Taunsa, Bahawalnagar, Ahmedpur Sial, Kot Momin, Pakpattan, Darya Khan, Chiniot, Alipur, Shuja Abad falls in Zone 2 A as per secondary sources, while Liaquatpur and Kalar Kalar falls in Zone 1 and Zone 2 B respectively.

Table 7: Seismic Zone wise classification of Project Tehsils

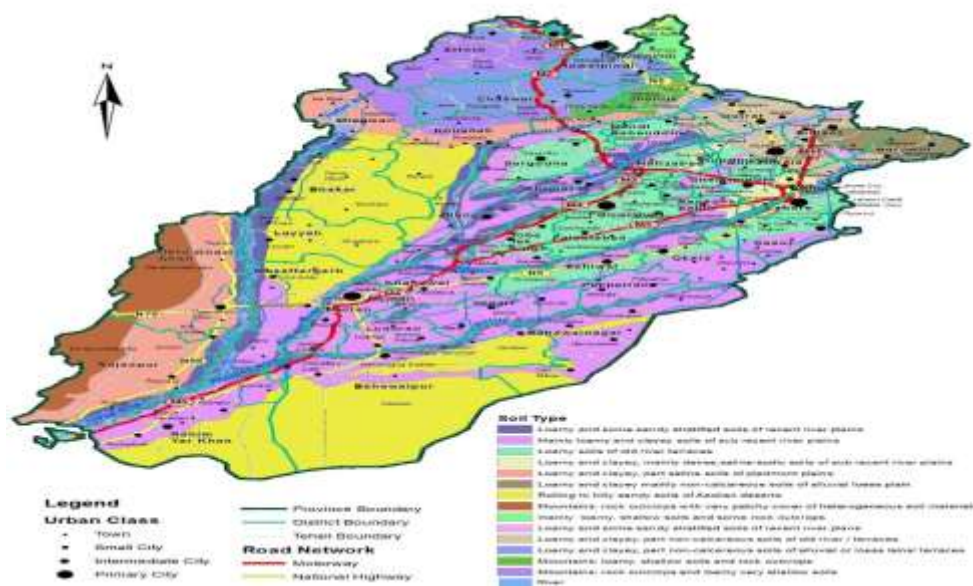
Zones	Intensity	Tehsils
Zone 1	<0.8	Liaquatpur (Partially)
Zone 2 A	0.8 -1.6	Rojhan, Taunsa, Bahawalnagar, Ahmedpur Sial, Kot Momin, Pakpattan, Darya Khan, Chiniot, Alipur, Shuja Abad
Zone 2B	1.6 - 2.4	Kalar Kahar, Iskhel, Mianwali
Zone 3	2.4 - 3.2	N/A
Zone 4	>3.2	N/A

³⁰ Emergency appeal final report Pakistan: Floods- Relief Web

³¹ Indus Basin Floods – Asian Development Bank

4.2.1.5. Soil Morphology

Soils represent the single-most important natural resource on which human existence and prosperity depend. A large variety of soils are found in Punjab, which vary significantly in kind and distribution. Although soil resources in Punjab province are immense, good quality soil that forms prime agricultural land are limited.³² The two contribution in soil types of Punjab are mainly loamy and clayey soil extended at eastern side of Punjab, rolling to hilly sandy soils of Aeolian deserts in south eastern and western side of Punjab, loamy and some sandy soils in north eastern side and along the riverside in Punjab³³ as shown in following Figure.



³² Environment-Urban Unit

³³ Soil Physics and Rice- USAID

Figure 12: Soil Type in Punjab Province

Tehsil	Soil Type
Khairpur Tamewali, Darya Khan Ali Pur	Sandy stratified soil Loamy and Clayey Hilly sandy soil of aeoline desert
Kot Momin, Karor Pacca, Pakpattan Shujabad, Liaquatpur	Loamy and sandy stratified soil of adjacent river plains
Kalar Kahar, Rojhan	Loamy and clayey , non-calcareous soil of alluvial

Table 8: Soil Type Tehsil Wise

The table above gives an overview of soil types in project tehsils, as per table the commonly found soil type in most of the tehsils including Kot Momin, Karor Pacca, Pakpattan, Shujabad and Liaquatpur is Loamy and sandy stratified soil of adjacent river plains, while Hilly sandy soil of aeoline desert is present in Khairpur Tamewali, Darya Khan and Ali Pur. Furthermore Loamy and clayey, non-calcareous soil is also present in KalarKahar and Rojhan.

4.2.1.6. Hydrology

With increase in population the pressure on water resources is also increasing. 60% of water is drawn from river Indus and its tributaries for consumption in agriculture, domestic, industry³⁴. Per capita annual water availability has dropped, fundamentally because of population growth, from 5,600 cubic meters in 1947 to the current level of 1,017 cubic meters, and is projected to decline further under the current infrastructure and institutional condition.³⁵ Ground water occurring within a depth of 500 feet below the surface averages less than 1,000 ppm of dissolved solids throughout approximately two-thirds of the Punjab³⁶. It is estimated that the volume of usable ground water in storage in this part of the alluvial aquifer is on the order of 2 billion acre-feet.³⁷

The Indus Plain does not have well defined natural drainage.³⁸ The introduction of irrigation system therefore resulted in surface and sub-surface drainage problems resulting in water logging and salinity, which has continued to aggravate over the period. Compared to the situation in the Upper Indus,

³⁴ Water development for irrigated agriculture in Pakistan- FAO

³⁵ Current state of water demand in Pakistan- UNDP

³⁶ Ground Water Governance in Pakistan- MDPI

³⁷ Climate Change in Indus Basin- IIASA

³⁸ Water Logging and Salinity in Indus Plain

groundwater use in the Lower Indus is very modest; yet waterlogging (groundwater within 1.5 meter of the soil surface) is common and has been assessed to prevail over 1.5 to 3.5 meters.³⁹

A study has been conducted by “Mot Macdonald Pakistan” in 8 out of 16 tehsils to assess the underground water quality and quantity. Results of above mentioned study shows that the in most of project tehsils fresh water aquifers are available except Bahawalnagar where brackish water was observed and in tehsil Darya Khan Indus river can be utilized to install tube wells⁴⁰. From the geohydrological testing as per MMP reprot, the following conclusions were drawn:

- Groundwater quality of shallow aquifer is fresh with safe TDS values across 22 mauzas where low-capacity wells could be proposed for potable water abstraction.
- Mauzas with groundwater TDS exceeding the safe limit, abstraction close to a recharging source, such as irrigation channel, is advised to harvest freshwater seepages.
- Based on the sum of 122 ERS probe measurements, dominant soils comprise fine sand with clay layers; coarse to medium grade sand extends vertically to a depth of 20-100m.
- There is no remarkable difference in results between pre-monsoon and post-monsoon surveys. This may be due to short interval between the two data acquisition periods i.e. between July-August 2020 to September-October 2020. Most of the resistivity values of ERS are consistent with the ERS repeated in post-monsoon seasons.
- The aquifer conditions of the areas are suitable for installation of low-capacity tube-wells of 0.5 to 1.0 cusec to a depth of 80 m (200ft) (limit of the bore depths for pumping tests, ERS and trial bores.
- The interface between fresh to marginal aquifer has not been encountered up to a depth of 100 m across most of the ground aquifer along the seepage zones.
- Hence majority freshwater sources have been proposed along the canals based on the strata conditions illustrated by ERS measurements. Water Assessment Tehsil Wise is attached as **Annexure A.**

In the project locations, 75% of the population dwells within 5 km of canals. They are abundant. Canal closure period is 2 weeks per year but they have sheet flow during closure. MMP Study for Hydrological Assessment Report for 30 Selected Mauza in 08 Tehsils / Districts of Punjab has been carried out, the information related to canals and thier availabilty in project areas is attached as **Annexure B.**

4.2.1.7. Surface Water Quality

Natural surface water quality in Punjab is quite good (TDS 125-250 PPM) but high level of contamination is a serious problem. Rivers are major source of surface water in Punjab and data of five rivers of Punjab is given in the following table given below:

Table 9: BOD Levels in five major rivers of Punjab

Sr. No.	Name of River	BOD
---------	---------------	-----

³⁹ Underground Quality and Quatity- MDPI

⁴⁰ Mot Macdolands Pakistan

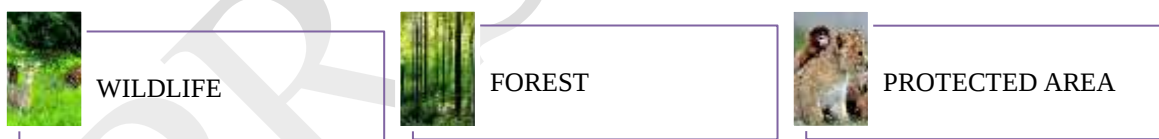
1	Jehlum	2.2
2	Chenab	4.6
3	Ravi	77
4	Sutlej	4.9
5	Indus	8.5

4.2.1.8. Waste Water

There is no waste water treatment facility installed throughout project tehsils, the contaminated household waste and waste from small industries is either discharged in water bodies or consumed for irrigation purposes. An assessment of waste water is performed by Mot Macdonald Pakistan in 8 out of 16 project tehsils. A total of 54 waste water samples were collected and the results showed that only one sample which was taken in Tehsil Nurpur Thal was found to be safe and comply WHO and PEQs standards for waste water where results of 53 samples came out to be unsafe. It was also confirmed through community consultation and personal observation that the waste water from households and industries is used for irrigation purposes and the place where waste water is collected a special type of plant having unpleasant odor grows which is locally called “Gandi Booti”. The detailed table of waste water study is given in **Annexure C**.

4.2.2. Biological Environment

Punjab is rich in biodiversity because of its diverse landscape and geographical location⁴¹. The variety of ecosystem is evident as Punjab is home to deserts, wetlands, forests, and riverine and agri- ecosystem. Punjab is home to diverse species of flora and fauna.⁴² The following section describes the biological baseline which includes Flora, Fauna, Forests and protected areas of project tehsils.



4.2.2.1. Flora & Fauna

The variation in climate and topography between northern, central and southern is slightly reflected in the flora and fauna of selected districts. A comprehensive data of project areas flora and fauna has been obtained from reports and research papers, a detailed list of flora and fauna of selected Tehsils is given in **Annexure D**.

4.2.2.2. Forest

The total area of Punjab Province is 50.95 million acres out of which the forest covered area is 1.66 million hectare which excludes linear plantation which makes 6.85% of total area of Punjab⁴³. Major types of

⁴¹ Forestry and Biodiversity Report- UNDP

⁴² Environment- Urban Unit

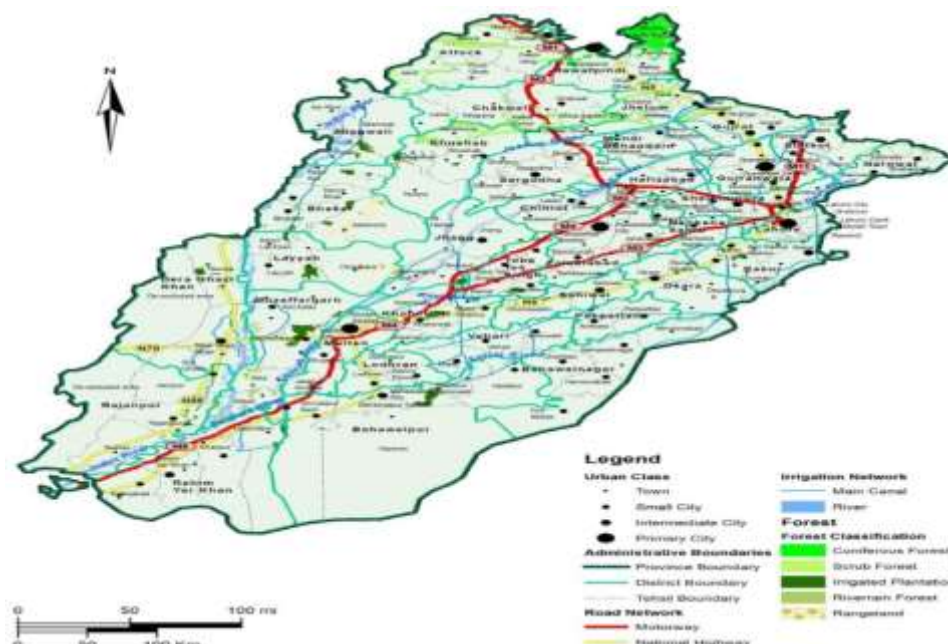
⁴³ Environment- Urban Unit

forest

types
the

per

been
most



found in province are: Major forest occurring in province are Irrigated Plantation, Riverain Forest, Scrub Forest, Range Lands and Coniferous Forest.⁴⁴ As secondary sources it has found that of project tehsils

including Kalar Kahar, Njurpur Thal, Ali pur and Rojhan have scrub forest where as Rangelands are also present in Tehsil Darya Khan and Ahmedpur Sial.

Figure 13: Types of Forest in Punjab

Areas

4.2.2.3. Protected

Out of 29 national parks of Pakistan 2 are located in project areas which are Lal Suhanra and Chinji National Park. Chinji National Park established in Chakwal District in 1987⁴⁵ and it covers an area of 15,061 acres. It is located close to close to Salt Range and is known for its rich biodiversity.

⁴⁴ The Atlas Forest Types – Punjab Forest Department

⁴⁵ National Parks of Pakistan

Lal Sohanra National Park is Pakistan's first national park⁴⁶ which was founded in 1972 in Bahawalpur, southern Punjab. It is one of the largest national parks of South Asia having diversity in landscapes. Lal Sohanra has deserts, forests and ponds as well. The following tables gives an overview of protected areas in project tehsils:

Table 10: Protected areas of Project Tehsils

National parks	Wildlife sanctuaries /protected wetlands	Game reserve	Region
Chinji National Park Chakwal	Chashma and Taunsa Barrage Dolphin Sanctuary Taunsa Barrage Wildlife Sanctuary Uchhali Complex	Diljabba / Domeli-Chakwal Kot Sabzal- Rajanpur Kallar Kahar Lake	NORTH ZONE
		Thal game reserve	CENTRAL ZONE
Lal Suhanra National Park, Bahawalpur	Cholisthan Wildlife Sanctuary		SOUTH ZONE

4.2.3.Socioeconomic Environment

The most populace province having population of 110 million people is Punjab province⁴⁷. Almost 40 million population lives in urban whereas 70 million people survive in rural areas. This section presents a broad profile of the prevailing socioeconomic situation in the selected tehsils of Punjab. This baseline has been prepared based upon the various reports, case studies and research papers, The subsequent section will include the existing conditions of demography, water (quality and sources) sanitation, means of livelihoods, conflict resolution and landholding size etc.

4.2.3.1. Administrative Profile

Governmentally, the province is divided into Districts, Sub-districts (Tehsils), Union Councils and Mauzas. The administrative units in the province are as follow:

- 36 Districts
- 140 Tehsils
- 5 City Districts
- 38 Towns in 5 City Districts
- 25,914 Mauzas/villages
- 3464 Union Councils – of which 978 are Urban Union Councils, 2486 are Rural Union Councils
- 20 Cantonment Boards

⁴⁶ Forest Wildlife and Fisheries Department

⁴⁷ Technical Paper- Drivers for Change- Urban Unit

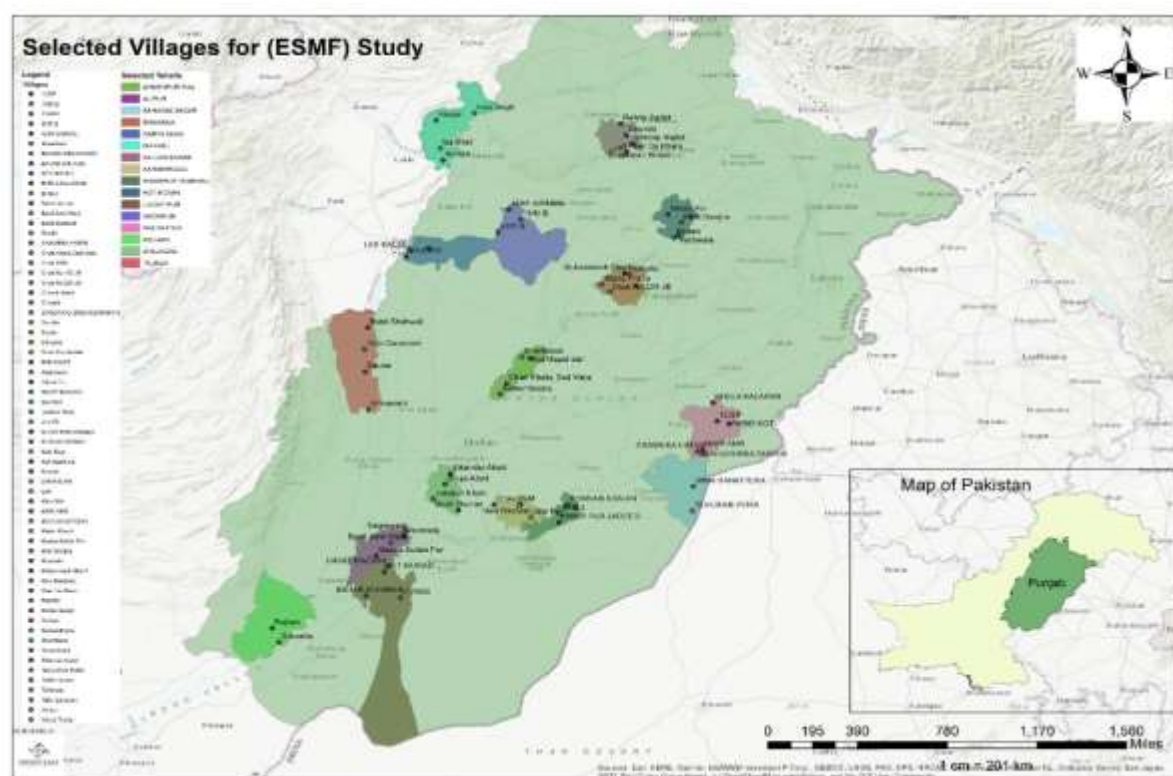


Figure 14: Selected Villages for ESMF study

4.2.3.2. Demographics

A number of secondary sources have been consulted to get a clear picture of demography of project tehsils, the available census data shows that tehsil Liqatpur is largest tehsils with respect to population 1,035,509, total number of households in the tehsils in 150 villages is 148,639 and it consists of 31,082 households spreaded in 455 villages. A Detailed table is given showing the population; number of households and number villages is given **Annexure E**.

4.2.3.3. Education

This section gives an overview of the number of educational institutes in project districts and it has been found that southern districts including Bahawalnagar, Rahimyar Khan and Bahawalpur have highest number of educational institutes where districts in central Punjab as very less educational institutes. The literacy rate of Kot Momin is highest among all project tehsils whereas Liqatpur has lowest literacy rate. The detailed table of educational institutes present in Project districts is given in **Annexure F**.

Table 11: Literacy Ratio of Project Tehsils

Tehsil	Literacy Ratio	Tehsil	Literacy Ratio
Noorpur Thal	56 %	Rojhan	45 %

Isa Khel	60 %	Liaquatpur	33.1 %
Kot Momin	80.5 %	Taunsa	75 %
Kallar Kahar	90 %	Karor Pacca	45 %
Darya Khan	79 %	Khairpur Tamewali	35 %
Pakpattan	60.7 %	Alipur	48 %
Bhowana	58 %	Bahawalnagar	25 %
Ahmadpur Sial	65 %	Shuja Abad	60 %

4.2.3.4. Health Facilities

The secondary data consulted shows that Sargodha has largest number of hospitals in the district, Rahim Yar Khan is largest district as per population but the hospitals are not enough to cater such population, it has just 8 hospitals. It has been found that Chiniot has lowest number of hospitals and health care units among 16 project districts. The overview of number of health facilities is given in **Annexure G**.

4.2.3.5. List of Industries

List of industries are given in **Annexure H**.

4.2.3.6. Gender-Based violence

⁴⁸ Pakistan ranks third-to-last, at number 151 on the 2020 Global Gender Gap Index (GGGI)⁴⁹ and Gender Based Violence is very common in rural areas of Punjab. According to a report by Punjab Commission on Status of Women, 12 % of women in Punjab have experienced non-spousal violence in their lifetime.⁵⁰ The report also states that in the last 12 months, 115 married women have experienced spousal violence⁵¹. One of the reasons is that there is a lack of awareness in women about their rights and their protection laws. This violence rate has increased about 18 % since 2015 as the record of reported cases has indicated this scenario. Physical, Sexual and Psychological violence by family members and others have also been experienced by females. A recent study revealed that COVID 19 situation has increased the cases of domestic Violence Against Women (VAW)⁵². District-wise numbers of VAW cases reported in 2017 is given in figure above, according to this figure project districts with highest numbers of VAW cases are: Muzafargarh and Lodhran whereas very few cases were reported in Chiniot, Bhakkar and Chakwal.

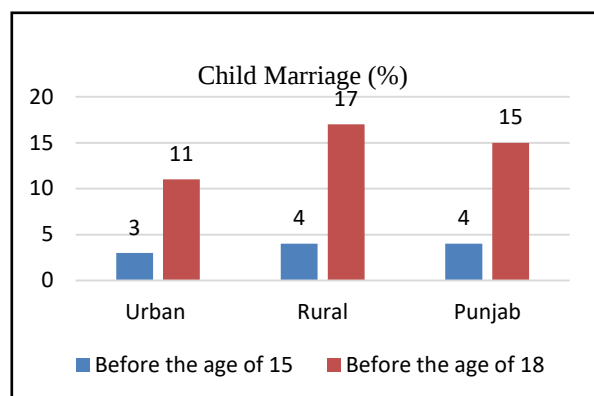
⁴⁸ Violence Against Women

⁴⁹ Global Gender Gap Index report 2020 by World Economic forum.

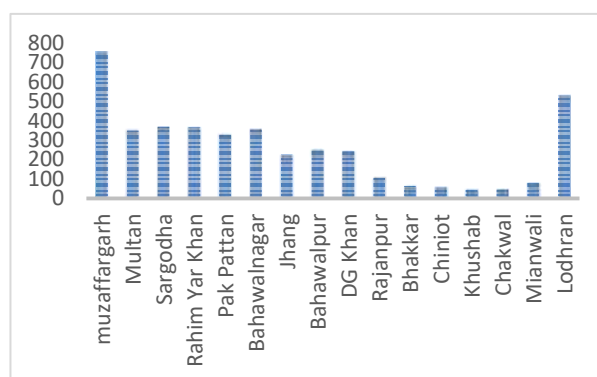
⁵⁰ Studying the role of education in eliminating violence against women - Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

⁵¹ Punjab Commission on status of Women

⁵² <https://www.dw.com/en/pakistani-women-trapped-between-coronavirus-and-domestic-violence/a-54107216>



Graph 2: Child marriage in Punjab



Graph 2: District Wise VAW cases

4.2.3.7. Cultural and Archeological Sites:

All the districts of South, Center and North Punjab have very rich cultural and archeological distinctions. During sub-projects execution, it must be considered at screening phase to identify such areas that may have any sort of negative impact due to project activities and Chance Find Procedures given in the ESMF also need to be duly considered during construction activities. Some of sites having religious and cultural importance are: **Shrine of Hazrat Taj Mahmud, Shrine of Shah Saiq Nihang, Noor Mahal, Kalar Kahar Temple, Tomb of Shah Rukn-e-Alam** etc. Detailed list of important cultural archeological sites of project districts is given in **Annexure I**.

4.3. An Overview of Baseline Data Collected as Primary Source

For **Primary baseline data collection**, a Survey was conducted by the ESMF Consultant. A questionnaire was developed for the purpose (attached as **Annexure J**). For primary data collection to have an overview of the existing socio economic and environmental conditions, 64 villages (3 to 4 from each of 16 project tehsils) were surveyed.

Findings of surveys are given in this chapter under relevant headings of environmental and socio economic parameters. Following is the detail of surveyed villages: (village's profile & key informant information is attached as **Annexure K**.

Selected Districts, Tehsil and Villages under PRSWSSP							
Sr. #	District	Tehsil	Village Name	Sr. No.	District	Tehsil	Village Name
1	Muzaffargarh	Isa Khel	Kala Bagh	33	Muzaffargarh	Ali Pur	Basti Jatoli Wala

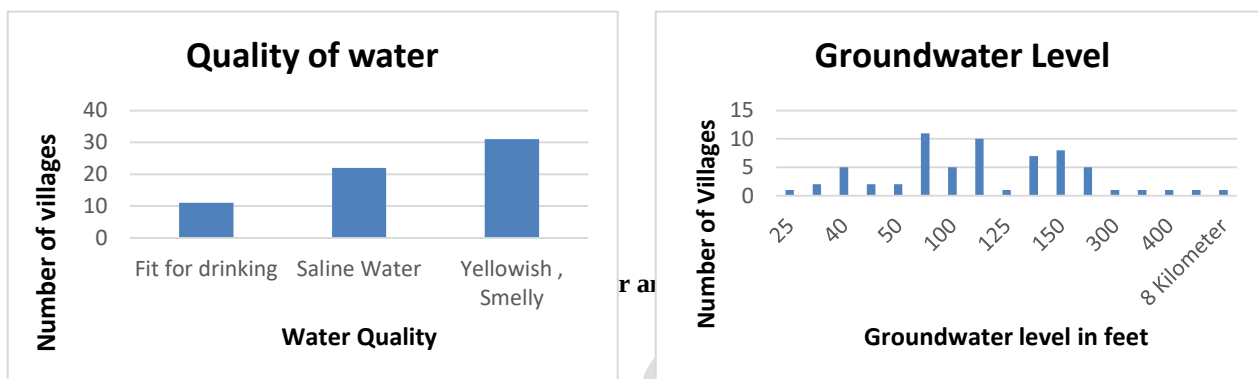
2			Vanjari	34			Gagrewale
3			Kundal	35			Mauza Sultan Pur
4			Isa Khel	36			Mudwala
5	Khushab	Noorpur Thal	Adhi Sargal	37	Dera Ghazi Khan	Taunsa	Tibbi Qaiserani
6			52/D.B.	38			Basti Shahwali
7			19/M.B.	39			Ahmadani
8	Bhakkar	Darya Khan	Daggar Qureshi Darmiani	40	Jhang	Ahmad Pur Sial	Dauna
9			Lak Kalan	41			Sharifabad
10			Majoka	42			Samandwana
11	Bahawalpur	Khairpur Tamewali	Khair Pur Jadeed	43	Chakwal	Kallar Kahar	Chah Khaliq Dad Wala
12			Bheli	44			Kot Mapal Sial
13			Khanan Araian	45			Chhoie Mallot
14	Rahim Yar Khan	Liaquatpur	Rameli	46	Sargodha	Kot Momin	Lafi
15			21/Abs	47			Matan Khurd
16			Bahar Khakhhi	48			Rehna Sadat
17	Bahawalnagar	Bahawalnagar	Hayat Machhi	49	Chiniot	Bhowana	Chumbi
18			Bet Murad	50			Peer Da Khara
19			Mina Sanatteka	51			Bhaikh
20	Pakpattan	Pakpattan	Tekuram Pura	52	Lodhran	Karor Pacca	Takht Hazara
21			Chaweka Hatar	53			Ghula Pur
22			Bahadurka Sharki	54			Talib Wala
23	Multan	Shujahabad	Farid Kot	55	Lodhran	Karor Pacca	Midh Ranjha
24			12/SP	56			Chak No 184
25			Mari Amb	57			Warra Thatta
26	Rajapur	Rojhan	Bhela Kalaran	58	Lodhran	Karor Pacca	Chak No 240
27			Shuja Abad	59			Darutta
28			Basti Gazran	60			Muhammadi Sharif
29	Rajapur	Rojhan	Jalalpur Khaki	61	Lodhran	Karor Pacca	Dolat Pur Saddat
30			Sikandar Abad	62			New Rindwan
31			Dil Kushah	63			JindPir
32			Rojhan	64			Chak 28/M

4.3.1. Physical Environment

This section gives an overview of Physical characteristics of project tehsils including Water quality, distance from water body, water availability, sanitation infrastructure etc:

4.1.1.1. Water Quality

A questionnaire-based survey was conducted in 64 villages of project tehsils, and the consultation with community revealed that the quality of potable water was very bad in almost all villages of 64 tehsils. The physical appearance of water was yellowish and has unpleasant odor. The consultation revealed that just 2% of the overall population of village have access to clean drinking water and rest of population consume



contaminated water as they cannot afford filter machine at home.

4.1.1.2. Availability of Fresh Water

This section show that the availability of fresh water resources in the villages visited by ESMF team, it was found that only 10 villages out of 64 have nearby water body with 2 km. The exact distance of village from nearby water body is given in table below:

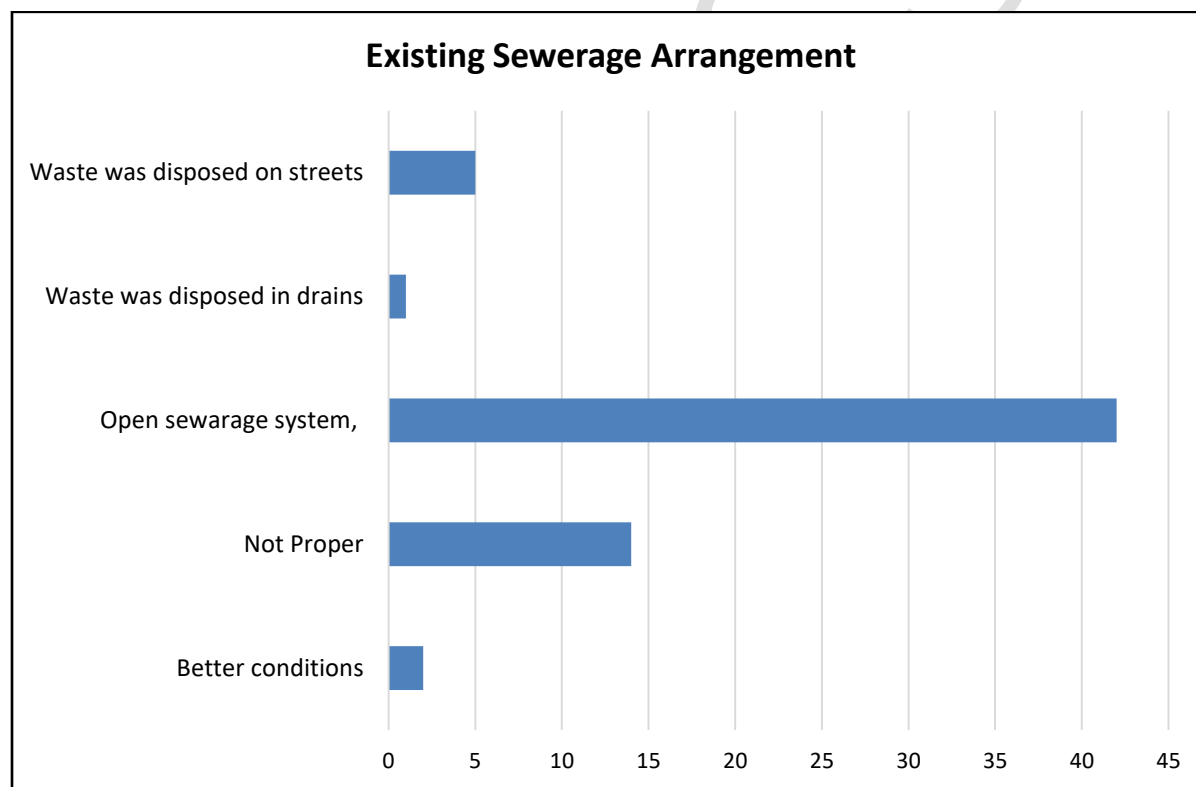
Table 12: Distances of Village to Nearby Water Bodies

District	Tehsil	Village name	Distance from water body	District	Tehsil	Village name	Distance from water body
Mianwali	Isa khel	Kala bagh	0.80km	Dera ghazi khan	Taunsa	Tibbi qaiserani	9.04 km
		Kundal	6.21 km			Basti shahwali	5.68 km
		Lak kalan	6.80 km			Ahmadani	12 km
		Majoka	5.61 km			Dauna	12.2 km
		Bheli	6.57 km			Samandwana	4.40 km
		Khanan araian	3.57 km			Chah khaliq dad wala	4 km
		Bahar khkhakhi	5.3 km			Kot mapal sial	1.16 km
		Hayat machhi	7.6 km			Rehna sadat	0.58 km
		Bet murad	0.1 km			Chumbi	4.56 km
Rajshahi	Pakpattan	Farid kot	0.3 km	Sargodha	Kot momin	Bhaikh	1.34 km
		12/sp	8.8km			Takht hazara	2.19 km
		Mari amb	0.2 km			Talib wala	0.1 km
		Bhela kalaran	5 km			Midh ranjha	5.42km
Rajshahi	Rajshahi	Dil kushah	1.64km		Taunsa	Warra thatta	3.38 km

	Rojhan	1.31km	Dera ghazi khan	Muhammadi sharif	5.28 km
	Mauza sultan pur	6.57 km		Tibbi qaiserani	9.04 km
	Mudwala	1.02 km		Basti shahwali	5.68 km

4.1.1.3. Conditions of Existing Sewerage System

During site visits carried out for primary data collection, it was found that the existing sewerage system in selected tehsils is open, no infrastructure is present currently and waste water from households and small industries is openly discharged into agricultural fields and water bodies. Open drainage system is becoming a breeding ground for various diseases in the villages, lack of awareness and proper infrastructure has also led to open defecation in some of the villages of Tehsil Rojhan. In Tehsil Pakpattan, pits were constructed in each household to collect household waste which was emptied by female members of family exposing them to various health hazards.



Graph 4: Existing Sewerage Arrangements

4.3.2. Biological Environment

4.3.2.1. Flora

During survey and community consultations in 64 villages of 16 tehsils, most common species found in most of the villages are: Bair (*Ziziphus Mouritiana*), Phulahi (*Acacia Modesta*), Keekar (*Acacia Nilotica*), Dharek (*Melia Azedarach* or *Chinaberry*), Peepal (*Ficus Religiosa*), Banyan (*Ficus Benghalensis*), Tahli or Sheesham (*Dalbergia Sissoo*), Frash (*Tamarix Aphylla*), Van (*Salvadora Oleoides*), Popular. Apart from these some shrubs, bushes and herbs of medicinal value are also present in some of villages visited by survey team. Common floral species with rooted vegetation and few different types of herbs, shrubs, and bushes are also present along canal and roads.

No Species were recorded as vulnerable, although a medicinal plant “Khurchi” (Holarrhena Pubescens) recorded extinct was observed in abundance in Tehsil Nurpur. A shrub locally called Jhao is also considered endangered and as it was abundantly found in Tehsil Esa Khel

4.3.2.2. Fauna

Some of common species observed during community consultation and personal observation were: Partridges and song birds, Vultures, kites and weaver birds, Rates, mice, porcupine, Hare, jackal, fox, jungle cat, nilgai, urial, chinkara, where as some villagers of southern tehsils reported that Wild boar, porcupine, Hare, porcupine, Chinkara Deer, nilgai and deer, Waterfowls, Rhesus Monkeys, Langurs are found in southern villages. Consultation with community of Kalar Kahar revealed that Punjab Urial once found in abundance is now leading to extinction because of poaching and unchecked trophy hunting.

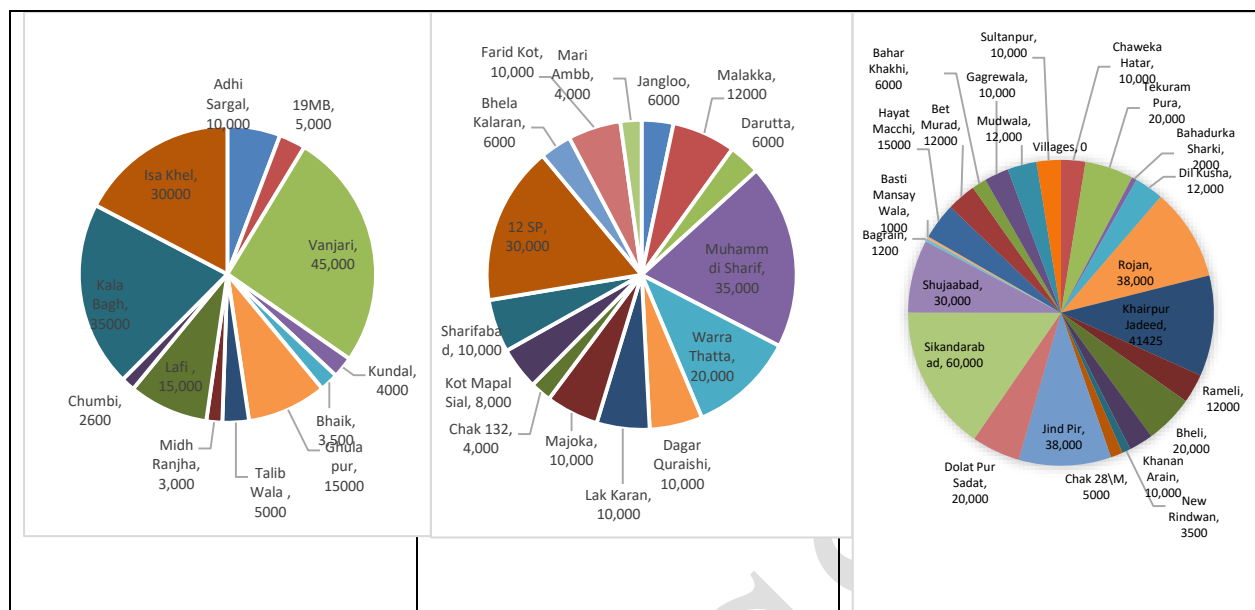
4.3.3. Socioeconomic Environment

This section gives an overview of socioeconomic condition of project tehsils on basis of field visits being conducted to 64 villages, the parameters discussed under this section are: demography, number of households, household size, type of village settlement, means of livelihood, household income, average land holding and conflict resolution mechanism.

4.3.3.1. Demography

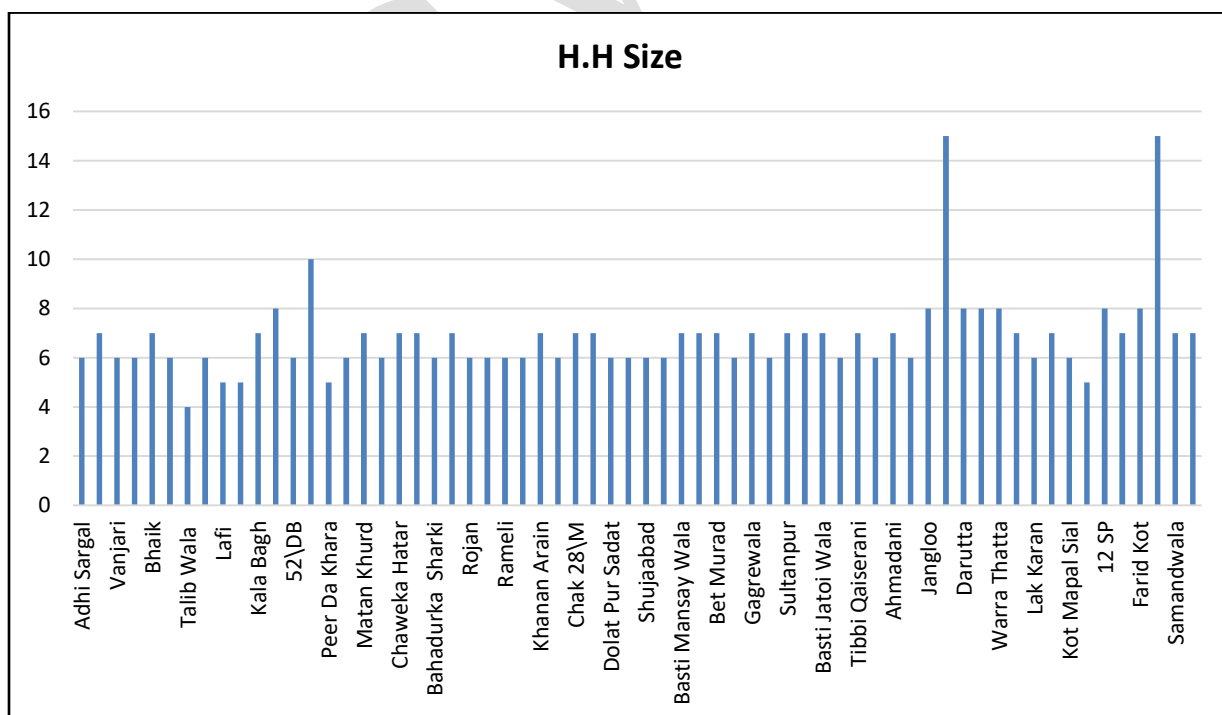
Data on demographic parameters was collected through consultation with local communities of 64 villages and is annexed as D. The graphs shows that Central Punjab village Vanjari of tehsil Isakhel is largest on basis of its population whereas village Chumbi of Tehsil Kalar Kahar is smallest with population of 2600. Central Punjab shows variation in demography in different villages because villages are spread on large land chunks and the settlements are in clusters form throughout the village, population wise Muhammadi Sharif of Tehsil Bhowana is largest. Same situation was observed in South Punjab, small hamlets were observed with 15-20 households and in such cases survey team consulted tehsil offices mauza wise population was considered in case of Sikanderabad which such relatively larger population. In South Punjab smallest village on basis of its population is Bagrain

and the largest village population was Sikanderabad (Mauza) of tehsil Shujabad.



4.3.3.2. Household size

Community consultation during field visit revealed that the average household size in most of the villages was 9, whereas in some cases the household size reached to 14-15 because of joint family system which is common in villages. A very few cases were reported in which single families were living with household size 5-6.

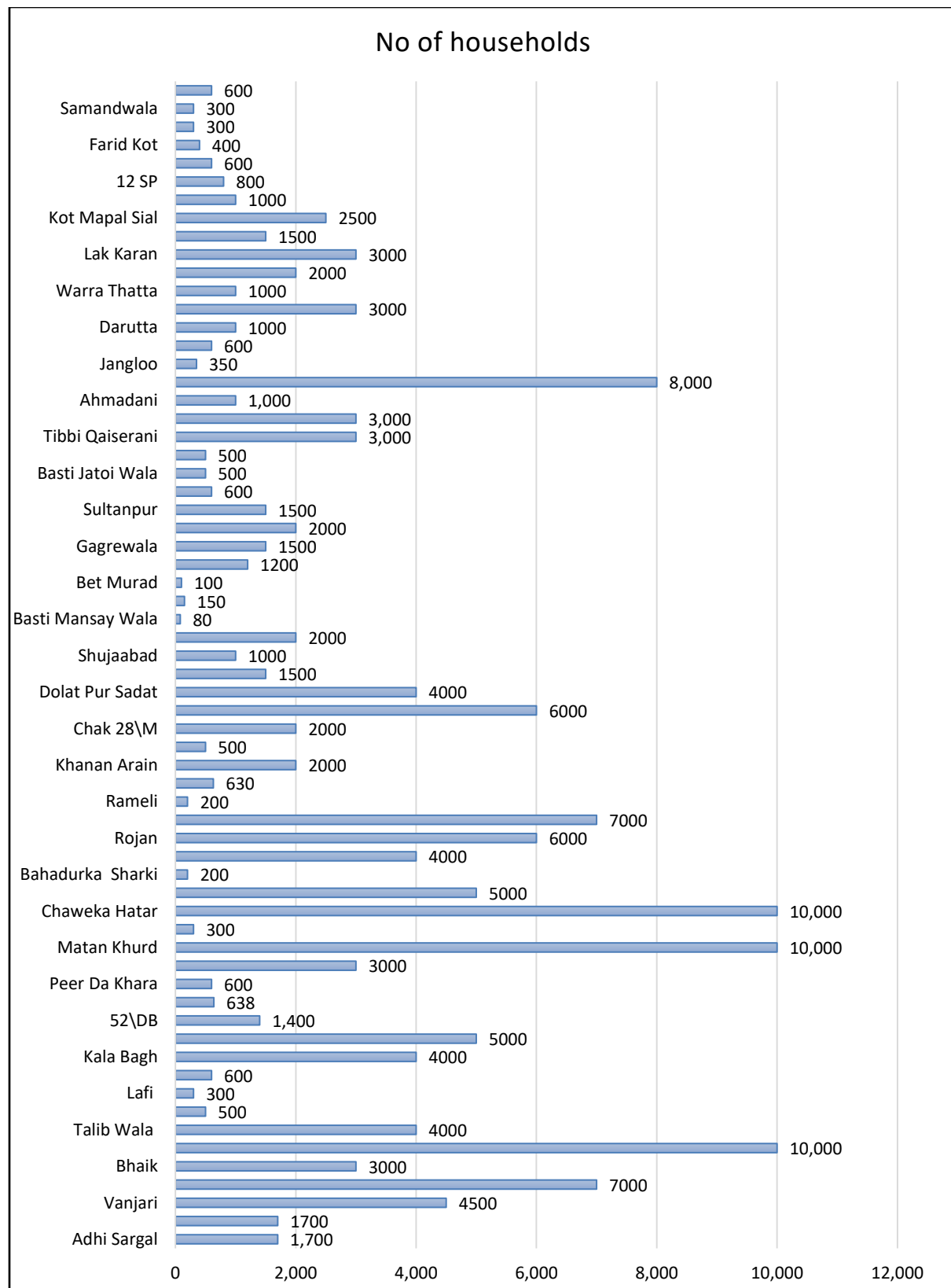


Graph 5: Household size

4.3.3.3. Number of Households

During community consultation and field visit it was revealed that the number of households in most of villages ranges from 200 to 1000, there were only three villages: Chaweka Hatar, Metan Kurd and Talib wala where population was reported to be 10,000. There was only one village which was smallest village on basis of number of households which was reported to be 80.

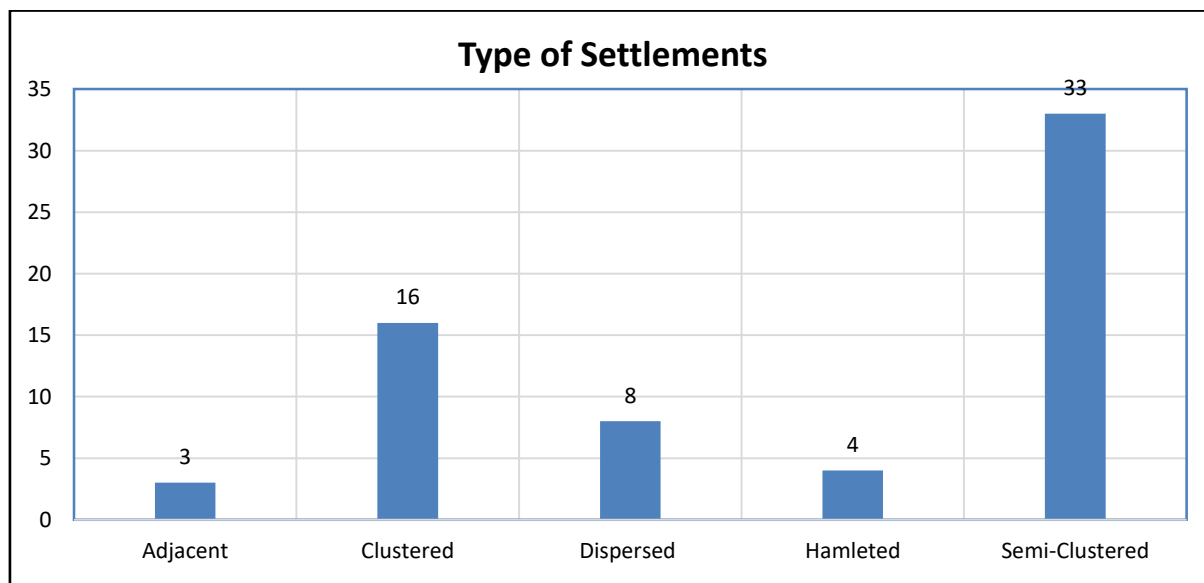
PRSWSSP



Graph 6: Number of Household

4.3.3.4. Type of Village Settlements

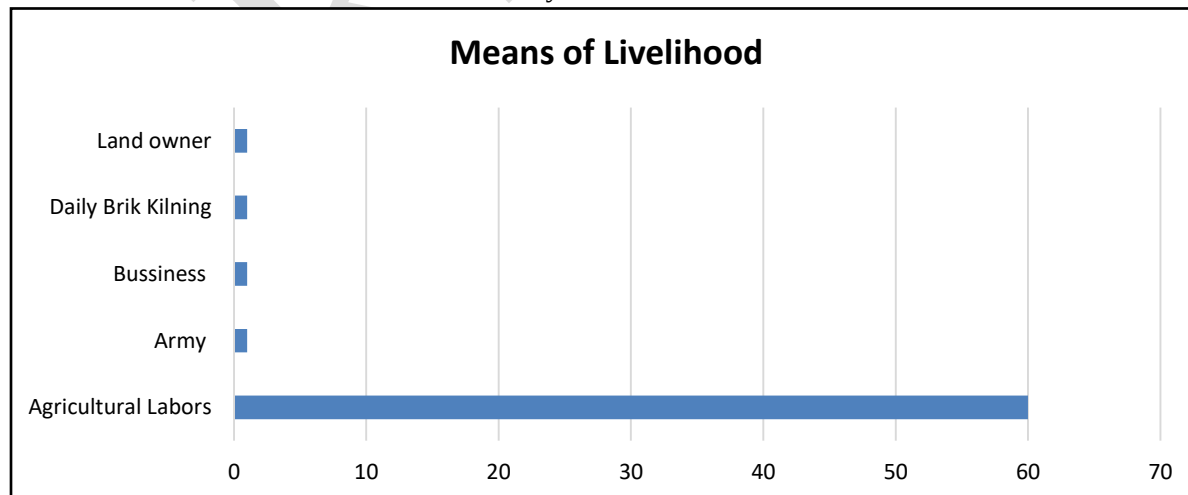
After visiting the 64 villages, it was found that majority of villages visited by ESMF team were semi clustered settlements. A very few were clustered or dispersed.



Graph 7: Settlement

4.3.3.5. Means of Livelihood

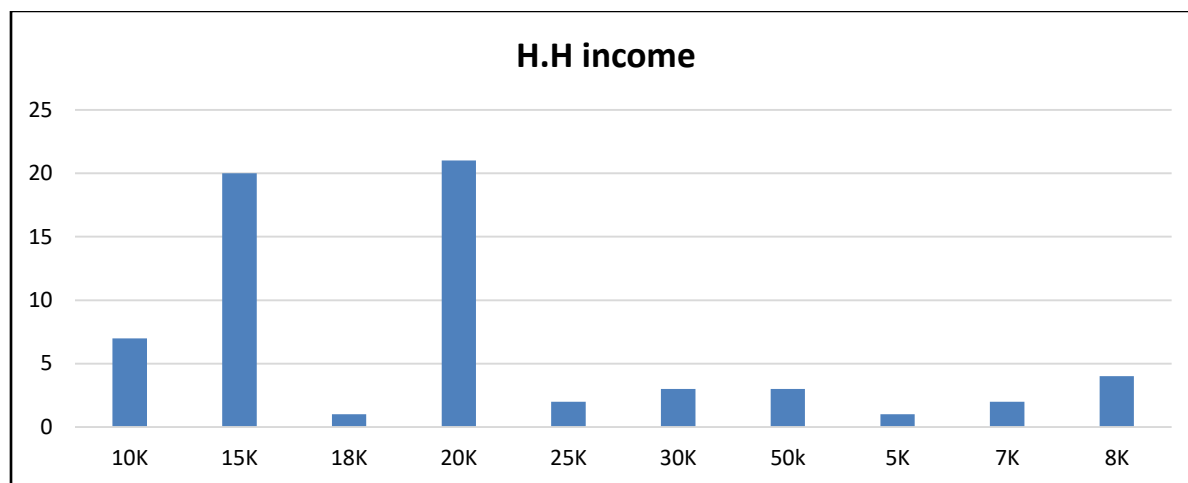
Community consultation during site visits revealed that the major source of livelihood in PRSWSSP villages is agriculture as almost 98 % of villagers are associated with agriculture for livelihood while only 2 % villagers rely on other sources of livelihood which include Daily wage labor on brick kilns, army, and business etc. A very few were land owners.



Graph 8: Means of Livelihood

4.3.3.6. Households Income

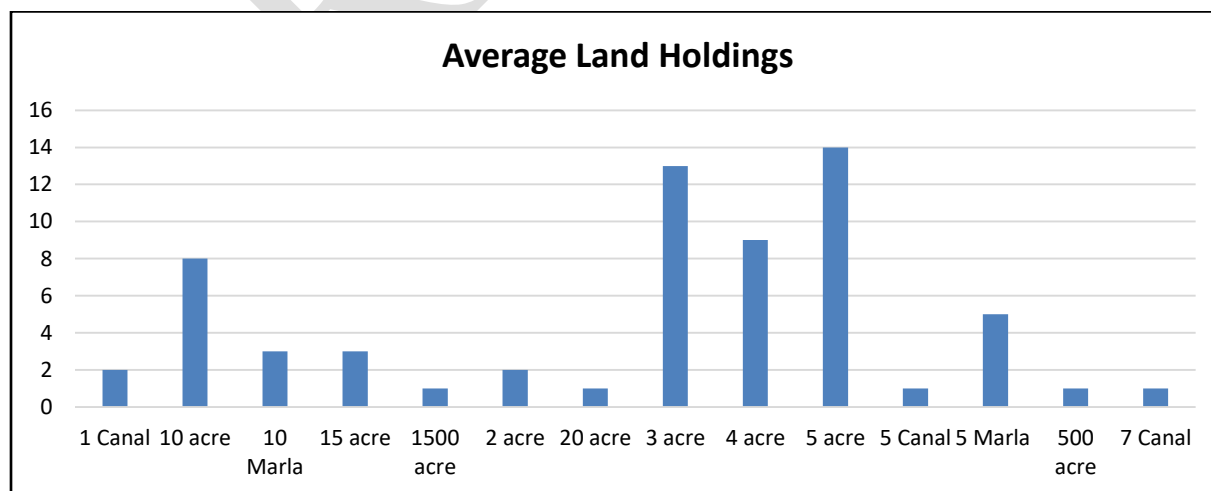
The primary data collected from 64 villages during community consultation revealed that the maximum income was 15,000-20,000 per month in majority of the villages. Villagers working as daily wage workers on brick kilns and land lord's agricultural fields earn 500-600 on daily basis for their survival. In some villages, the entire village worked on the land which was owned by only one landowner while in some villages, people are bound to work under the supervision of land owner.



Graph 9: Household Income

4.3.3.7. Average land holdings

The community consultation during site visits revealed that majority of villagers owned around 3-5-acre land in most of the villages especially in Central and Southern Punjab. Whereas, in Northern Punjab most of the people owned land either in Marlas or Kanals. It was also observed that in few villages like Mari Amb the entire village land was owned by single owner of the village and rest of the villagers were landless. Hence, 2% people were landowner and remaining 98% people were under landowner.



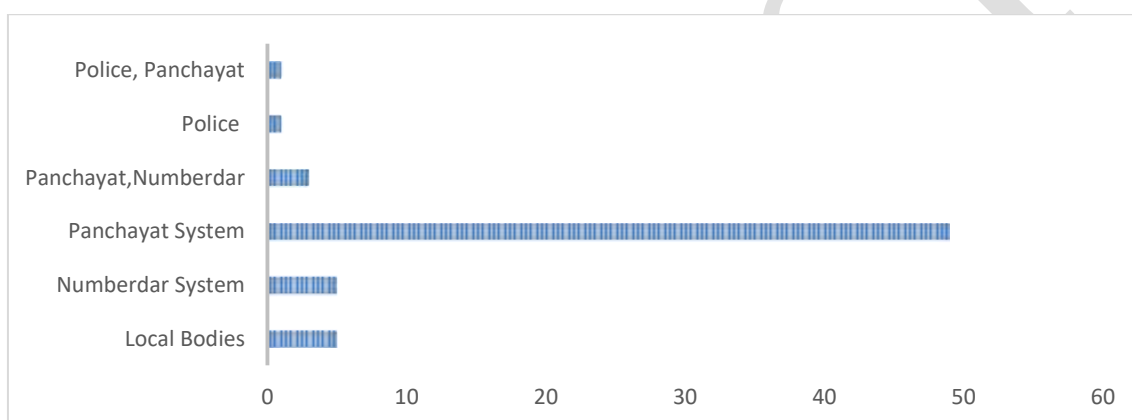
Graph 10: Average Land holding

4.3.3.8. Health and Diseases

During community consultation it was found that the health of the community is at risk in most of villages because of lack of access to safe drinking water and sanitation. Due to utilization of contaminated water, almost 90% villagers in project selected villages are suffering from various water-borne diseases. Hepatitis C, , Cholera and Diarrhea are the common water borne diseases described by the village communities. Open drainage and open heaps of solid waste have provided breeding grounds for mosquitoes and flies which are major vectors of various diseases.

4.3.3.9. Conflicts Resolution

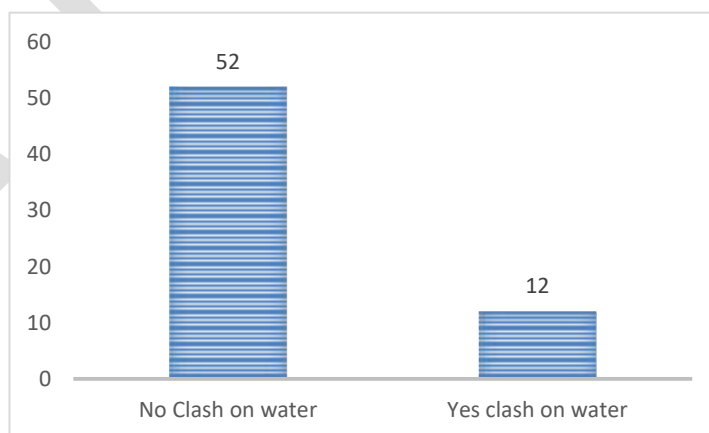
The local level grievance redressal mechanism is being dealt by Panchayat System in mostly villages, if the conflict cases are not resolved at Panchayat level then are referred to police and other authorities.



Graph 11: Local Level GRM

4.3.3.10. Water related Conflicts

During community consultation it was revealed that, 52 out of 64 villages, never experienced any type of conflict on water related issue but most of villages visited in northern Punjab have minor conflicts related to water.



Graph 12: Conflicts related to water

4.3.3.11. Ethnic Groups

During consultation with community it was revealed that caste system exists in the villages and families of casts such as Kharl, Qureshi, Sial, Lak, and Kalasan dominating in most of the villages. All villages visited during survey are based upon Muslim population except 10% Christians in Sharifabad (village of tehsil Ahmadpur Sial). All the Muslim festivals (Eids, Milad) are celebrated by the villagers.

4.3.3.12. Languages

In Southern Punjab, Balochi and Saraiki speaking communities, besides Punjabi speaking, are also found and Siraiki speaking communities are dominating. Whereas, in Central and Northern Punjab, Saraiki and Hindko is also spoken along with Punjabi and Urdu language.

Table 13: Languages of Project Area

Sr No	Punjab	Languages
1	North Punjab	Punjabi, Hindko, Saraiki
2	Center Punjab	Saraiki, Punjabi, Urdu
3	South Punjab	Balochi, Saraiki, Punjabi

CHAPTER 5 STAKEHOLDERS CONSULTATION

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 Identification of Stakeholders

Stakeholder analysis was carried out to identify relevant stakeholders on the basis of their ability to influence the project, ability of group to get positively benefitted 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.

In preparation for the ESMF, three major groups of stakeholders were identified:

- i. Local Communities;
- ii. Influential leaders, landowners and religious leaders at village level
- iii. Government Departments

The key aspects, including consultation objectives and consultation tools/methodologies discussed in the following sections.

5.3 Consultation with Local Communities

Community perceptions of the expected outcomes and the implementation process are necessary ingredients for ascertaining project success and adjustments to planned interventions and influential community groups have an important role in promoting the project concepts, identifying target households, and monitoring project activities at the local level.

Consultation with local communities was carried out in line with the following objectives:

- Inform the local communities about the project concepts and planned project interventions

- Ascertain the community's perceptions of the project concepts and planned project interventions and incorporate their feedback/comments.
- Identification of potential positive and negative social and environmental impacts.

The participation of community during discussions was overall encouraging and positive about proposed project interventions. Moreover, participation of women during focus group discussion was ensured to promote their participatory role and to know their feedback about the project. In general, the local communities consulted were in favor of project and they ensured the Consultant teams to cooperate throughout project cycle as they believe the project will bring economic activity in area along with improvement in sanitation system and provision of clean drinking water. A detailed list of consultation locations, date of consultation and number of participants is given in **Annexure L**.

Table 14: Discussion and Findings of Community Consultation

Sr. No	Community Concerns/Feedback/Discussion/Personal Observations	Location	Reply/Remarks and ESMF Options
1	• Quality of Drinking Water is not fit for health and the communities are consuming that water as they don't have any other choice. More than 90 % of people living in various villages of central Punjab are dependent on ground water. The waste water of sugar mills penetrates into ground water because of lack of waste water treatment facility which deteriorating the water quality. • The waste water from Ramzan Mills is severely affecting the ground water quality of Muhammadi Sharif and Darutta village of Tehsil Bhowana, as a result of which every 5th person is suffering from hepatitis. • The water left in pots for some time it turns yellowish due to its deteriorated quality • The consumption of contaminated ground water is causing health issues in children and women especially in pregnant women. • The crop quality and quantity is declining because of contaminated water being used for irrigation. • Some villagers complained about the death of aquatic life in Chenab River because of toxic waste water from nearby factories.	Community of Muhammadi Sharif and Darutta Tehsil Bhowana (District Chiniot) Central Punjab	• PRSWSSP interventions will play a significant role in handling issues related to drinking water quality • Better health and hygiene practices will ultimately result in good health and nutrition conditions of the women and children • The project will create an open defecation free environment that will help to eliminate sanitation & hygiene problems at grass root level and deliver significant impact on health outcomes • For assessment of water quality, water testing will be ensured before and after execution of such subprojects and it will be made part of Management and mitigation plan • Preventive measures will be adopted during execution of PRSWSSP subprojects to improve the drinking water quality • For water supply, PRSWSSP will move households to piped water supply with metered connections and ensure that all water is treated for safety.

Sr. No	Community Concerns/Feedback/Discussion/Personal Observations	Location	Reply/Remarks and ESMF Options
2	• Open Sanitation and drainage System: No housing unit has proper sanitation system except the landlord, rest of community members have open sanitation system and the household waste water is used for irrigation purpose which adds the toxic chemicals/ detergents and soaps into food chain. • Gender roles - In some villages pit holes are dug for household waste water and it collects the water, the women members of family are supposed to empty the pit hole and dispose off directly in open passages/streets or nearby open fields which is an unhygienic practice and creates unpleasant and unhealthy impacts on the areas and overll on women health • Women are suppressed and not consulted during decision making. • Proper sanitation infrastructure is not priority of the communities due to which women households are affecting badly. • Health of livestock is deteriorated because of consumption of waste water • Due to standing waste water in any field for a particular period a special type of vegetation “locally called <i>gandi booti</i>” grows with unpleasant smell. • Open defecation is common in basti Manse wali (southern Punjab), the community of the village don’t have financial resources to build toilets or sanitation infrastructure.	Women of Tehsils Pakpattan-Kot Farid, SP 12, Mariamb Bhakkar District Darya Khan Tehsil Village Majhoka, Daggar Qureshi Darmayni, Lakh Karala (Central Punjab)	Through PRSWSSP: • Community will be sensitized on gender roles and capacity building sessions will be conducted throughout the project length • Awareness among the society about health hazards associated with drinking contaminated water poor sanitation will positively impact their living standards. • Treated liquid waste will be used for agriculture activities and in crop fields that will enhance their productivity. • Fertile lands which are under threat due to water shortages may be irrigated up to some extent • Facility of sewerage /covered drainage will motivate the HHs to construct toilets at their homes as now many of them are reluctant due to lack of sewerage systems and it will discourage open defecation • The upgradation of sewerage/covered drainage systems will reduce the social and financial consequences resulting from the direct damage to properties caused by flooding. • Sanitation and waste water treatment component of PRSWSSP will be dealing in Household Disposal of Fecal Waste and existing open drains will be retained to serve communities for storm water drainage • Component 2 of PRSWSSP i.e. Behavior Change and Capacity Development, will train women in the village to become agents of change working with NGOs that have a demonstrated record of success with community mobilization as partners in this process while Subcomponent 2.1 Awareness raising and behavior change is related to COVID-19 and safe WASH practices
	Sugesstion from a Land Owner: Subprojects proposed activities may be planned so as they may not affect the		During community consultation social and environmental screening stage,community concerns will be noted and mitigated in the

Sr. No	Community Concerns/Feedback/Discussion/Personal Observations	Location	Reply/Remarks and ESMF Options
	harvesting season to avoid any damage to the standing crops ,further all the village communities (both men and women) got engaged in crop fields during harvesting season		relevant mitigation and management plan so that no such impact may arose and it will be ensured to avoid subprojects activities during harvesting seasons
3	• Strong feudal system prevails in most of villages of Punjab and the land is owned by 30% of the village population while rest of 70% people work under landlords owning the land. • Women are not allowed to leave the house without permission of head of family, most of women are not aware of hygienic practices and products • Majority of the community members' work as laborers in fields or brick kiln with 600-700 rupees per day • Livestock is major source of income for most of people. • Lack of schools for girls- they have school till primary level	Local community of Dagga Qureshi Darmiani & Pakpattan	Through PRSWSSP: • Extensive social mobilization will engage the overall village community under one objective of health and hygiene • Job creation and employment opportunities will be generated for educated youth • Extensive Behavior Change Campaign will play an important role in awareness about health and hygiene practices • Component 2 of PRSWSSP i.e. Behavior Change and Capacity Development will focus on providing residents of villages with information on the health and environmental impacts of poorly managed water and sanitation, and household and community behaviors that exacerbate these impacts
4-	• The waste water from households converted into wastewater pounds because of water logging in some of villages of southern Punjab especially Rojhan, the water level raises and enters into household cause water borne diseases and damages the foundations of houses • Flooding is another issue faced during monsoon season and destroys crops which further worsen the economy of the village. • The flooding damages the agricultural land, and physical infrastructure of the village including roads, houses and schools etc.	Community of Rojhan South Punjab District Rajanpur	• Community will be involved through capacity building sessions for men and women to change the behaviors and to help them adopt good sanitation related practices • Facility of sewerage /covered drainage will motivate the HHs to construct toilets at their homes as now many of them are reluctant due to lack of sewerage systems and it will discourage open defecation • The upgradation of sewerage/ drainage systems will reduce the social and financial consequences resulting from the direct damage to properties caused by flooding while existing open drains will be retained to serve communities for storm water drainage They will divert rain and flood water to nearby water bodies and will be kept separate from the sewerage network • The separation of storm water drainage from sewerage will also increase the flood water conveyance capacity of rural settlements, which will reduce retention of

Sr. No	Community Concerns/Feedback/Discussion/Personal Observations	Location	Reply/Remarks and ESMF Options
			water inside settlements and consequently mitigate the impact of floods
	Suggestion from Community Leader: PRSWSSP interventions should be executed proper feasibility and assessments of the area to make them sustainable		Environmental and Social screening is prerequisite for each subproject which will assess the both negative and positive social and environmental impacts that may arise during or after execution of it and accordingly mitigation measures will be provided during and after execution and this process will ensure the overall sustainability
5	Waste dumping is major issue faced by local communities, lack of awareness and lack of proper waste management system has resulted in waste dumps of center of village which is major source of diseases like diarrhea and malaria especially in summers.	Villagers of south and central Punjab	- Solid waste management from collection to healthy disposal system will be integrated in project activities along with treatment of waste water and it is part of PRSWSSP interventions - PRSWSSP 's subcomponent 3.2: Solid Waste and Animal Waste Management will promote separation and safe disposal of solid waste and to facilitate recycling of waste and prevention of disposing of waste in water bodies

Personal Observation

- It was observed that the toilets are built but the water runs through the house making it difficult to stand near it, it enters into agricultural fields while crossing village streets.
- The communities living in visited tehsils are the most vulnerable in terms of their exposure to solid waste, waste water, lack of literacy and education.
- Lack of basic facilities like clean drinking water and sanitation facility
- The livestock and agricultural crops
- Gender biasedness, feudal system which suppresses the poor members of the village.
- People are suffering from various diseases because of poor sanitation system, consumption of contaminated water and open defecation

Their issues can be resolved by ESMF options:

- Most of the environmental and social issues and their subsequent impacts on health system and aesthetic conditions of the villages are already covered under PRSWSSP interventions
- Through Environmental and Social Screening of each subproject ,it will be ensured to identify all the impacts and provide their mitigation measures in the management and mitigation plans

Awareness and Behavior Change Campaigns will be arranged extensively for all the groups and communities for better environmental and social management practices Component 1: Water Supply and Sanitation Infrastructure Development

- Water Supply will be provided to the villages by:
 - a. Direct pumping of groundwater from unconfined aquifers
 - b. Skimming wells adjacent to main or branch canals
 - c. Skimming wells adjacent to irrigation watercourses
- Sanitation and waste water treatment and Household Disposal of Fecal Waste is important components of PRSWSSP
- Existing open drains will be retained to serve communities for storm water drainage
- Component 2: Behavior Change and Capacity Development of PRSWSSP will focus on providing residents of villages with information on the health and environmental impacts of poorly managed water and sanitation, and household and community behaviors that exacerbate these impacts while subcomponent 2.1 Awareness raising and behavior change related to COVID-19 and safe WASH practices will promote:
 - 1. actions that households and communities can take to ensure physical distancing and basic hygiene,
 - 2. small-scale infrastructure to directly promote good hygiene practice and
 - 3. enhance jobs for unskilled and semi-skilled labor

Solid Waste and Animal Waste Management component of PRSWSSP will promote separation and safe disposal of solid waste and facilitate recycling of waste and prevent disposing of waste in water bodies

(Pictorial evidence of communities' consultation is attached as **Annexure M**)

5.4 Consultation with Government Departments

Various consultation meetings were conducted in 16 tehsils of Punjab where PRSWSSP is going to be implemented.. The Consultants team conducted detailed meetings with tehsil office representatives in 16 tehsils and shared objectives of PRSWSSP. The authorities met, appreciated the proposed project and ensured the Consultant to cooperate throughout project planning and implementation period. All the stakeholders will play an important role in enabling the implementation of planned project interventions. Their understanding of the proposed interventions and the role they are expected to play in the project increases their ownership of the project and minimizes the risks of project derailment and delays. List of Government stakeholders consulted during ESMF preparation and their feedback is as under:

S.No.	Name	Organization/Department	Designation	Feedback and Reply
1.	Ms. Iqra Mustafa	Commissioner Office, Bhowana	Assistant Commissioner	- Water quality is not fit for drinking - Sugar mills in Bhowana discharges the waste water in water bodies and in agricultural fields, the waste water mixes into ground water which is consumed by the villagers. Reply: Water treatment plants through PRSWSSP will help to improve the drinking water quality and ultimate health of the community. Relevant district office of EPD may be taken onboard for the solution of factories discharge of waste waters and through PRSWSSP stakeholders engagement and consultative sessions will be arranged throughout the length of project which will positively play a key role in such issues
2.	Aamir Irshad	Environmental Protection Department-RYK	Assistant Director	Waste treatment plants are very much essential as they will improve health of villagers and reduce contamination of water bodies.
3.	Khalid Mehmood	Environmental Protection Department-RYK	Environmental Inspector	Reply: Already taken up by PRSWSSP
4.	Maria Safeer	Environmental Protection Department-Multan	Assistant Director	Involvement of women is really improvement for promotion of health and sanitation in south Punjab, rural women work in agricultural fields and engaged in house chores like cleanliness which makes them change agent so it is essential as it is women who suffer a lot from various issues including malnutrition and water borne diseases. Reply: Women engagement and their role will be strengthened through PRSWSSP and they will be made part of all the intervention taken under the project. In this regard, ESMF has also devised a Gender Framework
5.	Dr. Muhammad Azam	Pakpattan Tehsil Office	Planning Officer	Trainings related to environment and social management aspects must be provided to the tehsil office officers for their better understanding and also

S.No.	Name	Organization/Department	Designation	Feedback and Reply
6.	Sajid Khan	Pakpattan Tehsil Office	Assistant Planning Officer	to the Panchayt/Village Councils so that after implementation the project, they can operate the subprojects smoothly in a sustainable manner. Reply: Capacity building and awareness sessions on ESMF implementation processes and procedures will be provided at SDU-TO (tehsil officers) level and Panchayt/Village Councils level and also Behavior Change sessions at community level ,throughout project planning and implementation.
7.	Abdul Qadeer	HUD & PHED ,Lahore	Water Expert	Waste water treatment was suggested earlier by HUD & PHED in the villages of Punjab but wasn't implemented due to financial constraints. It is quite hopeful if and good initiative as alone clean water supply can't resolve the issues. Bio waste treatment is also a solution of many issues in village life Reply: Through PRSWSS, it will be implemented in true letter and spirit
8.	Ashar Asif	HUD & PHE Department,Lahore	Project Lead (Design Cell)	
9.	Naqi Iqbal	WASA Multan	Sanitation Expert	Solar energy can be used for tube wells. O & M after execution may be a main concern as many government projects have failed because of not proper maintenance after execution. Reply: Panchayt/Village Councils at grassroot level will be made self sufficient to run thses interventions on sustaibale basis once completed
10.	Sania	Women Development Department Punjab,Lahore	Assistant Technical Section	Intensive sensitization and awareness sessions for women are very important for the successful implementation of such projects. Participation of all groups including elderly, divorced handicapped, widows, must be ensured as open defecation in open areas or open fields is common and it will be big challenge for the implementation of PRSWSSP especially for the people in old age. Reply: Before and during execution of all the subprojects,vulnerable groups including women, people with disabilities, people in old age ,minorities ,isolated communities and marganillized communities will be consulted and engaged in the overall implementation and consulation procedures and provisions will be made for their facilitation

S.No.	Name	Organization/Department	Designation	Feedback and Reply
11.	M.Waqas Afzal	Punjab Commission on the Status of Women, Lahore	Divisional Coordinator	Annual Gender Parity Reports are being published by the commission after detailed study of women related issues in rural areas of Punjab, which is a relevant baseline for such projects, reports have shown various water borne diseases in the remote villages of Punjab, these diseases if not cured timely, can cause serious issues in pregnant women and children. Reply: PRSWSSP interventions in terms of better drinking water, waste disposal facilities, better sanitation and hygiene practices will overall help in improving the status of villagers women
12.	Syed Samnaan Haider	Punjab Saaf Pani Company, Lahore	Research Associate	Utilization of community land can cause problems in longer term. Social mobilization is an integral element in such projects
13.	Yasir Bashir	Punjab Saaf Pani Company, Lahore	Regional Director	Reply: Community land will be taken on voluntary and donation basis and it will be avoided if there may found any conflict for which PRSWSSP will adopt the VLD processes and procedures as per WB guidelines and it will be ensured through transparent and conflict free process Social mobilization at each level of PRSWSSP interventions will be ensured
14.	Sabuhi Essa	MMP, Lahore	Senior Urban Design Expert	MMP has conducted detailed studies to assess water quality in Punjab, the results of the studies can be used must be incorporated in project planning and implementation. A proper infrastructure is really important for a healthy and hygienic life style at village. Reply: Findings of MMP study whereas relevant have been used in ESMF and may be further useful as well
15.	Mishele Ijaz	MMP, Lahore	Senior Housing Expert	
16.	Mr.M. Razaq	Tehsil Council, Tehsil Kot Momin, District Sargodha	Chief Officer	Quality of drinking water is extremely poor and with bad odor coming from wells and hand pumps. There is no sewerage system in most of the villages and where it does exist in any way, it has been deteriorated Villagers are facing many health issues due to this situation. It is intensely needed to introduce appropriate sewage system and recuperation of pipelines, naalas and water tanks.

S.No.	Name	Organization/Department	Designation	Feedback and Reply
				Water treatment plants will help to improve the health of the community which is currently suffering because of poor sanitation system. Reply: PRSWSSP interventions will help to address all these issues
17.	Mr.Hafeez-Ullah	Commissioner Office, Tehsir Nurpur Thal, District Khushab	Enforcement Inspector	The source of drinking water is hand pumps, motors, lakes and tube wells for the natives of rural area. 70% area is arid (Barani) where water shortages are a major concern Only 20 % Government owned tube wells are in working conditions and local communities are using tube well as private water source there. The quality of water is not satisfactory because it is acidic and bitter in taste to drink. The local inhabitants of the village had to fetch water from remote villages and they had to face extreme hardships in obtaining drinking water. Water pipes had been punctured and there is no concept of sewerage. There is a need to improve the drinking water quality. The existing drainage system is open and uncovered. Water is flowing in the streets as no proper drainage system is present. Overall, there is no proper system of drainage, clean drinking water, solid waste management and sanitation services for the people. Health and hygiene conditions are also meager Waste water treatment plant is much needed as it will improve the health of villagers and will reduce contamination of water bodies. Reply: PRSWSSP intervention will help to resolve the issues related to drinking water, waste water treatment, solid waste management and upgradation of sewerage and sanitation systems Behavior Change Campaigns through project will help in enhancing the quality of lifestyle and improve the health and hygiene conditions
18.	Mr. Mian Usman	Commissioner Office, District Mianwali	Additional Commissioner	No sewerage system exists in villages There remained constant problems of pipelines of drinking water. Mixing of sewage water with clean water is serious issue of the area. The community suggested that the water lines should be renewed. Reply: PRSWSSP is going to improve the overall conditions of these villages

S.No.	Name	Organization/Department	Designation	Feedback and Reply
19.	Mr. Farooq	Commissioner Office, District Chakwal	Deputy Commissioner	Ground water is the major source of drinking water and due to excessive utilization; water table is at 400 feet. Sweet water is found in pockets while brackish water is also common in certain areas. This is arid area and there is no source of water for farming and cultivation. Solar tubewells are also found in the area Due to characteristics of hilly area, water seepage is common and no flooding issues due to standing waste waters Village communities have made their private gutters at household level and they are self sustaining it. Reply: PRSWSSP will help in strengthening the village communities system to run the interventions on sustainable basis
20.	Mr.M. Razaq	Tehsil Council, Tehsil Kot Momin, District Sargodha	Chief Officer	Drinking water source is hand pumps and is of extremely deteriorated quality with bad odor and unfit for human health No sewerage and sanitation system exists in most of the villages Water treatment plants will help to improve the health of the community which is currently suffering because of poor sanitation system and poor quality of drinking water. Reply: Project interventions will help in resolving such issues related to drinking water quality, upgradation of sewerage and drainage system, water treatment plants and overall health and hygienic conditions
21	Muhammad Zubair	Commissioner Office (Shujabad)	Assistant Commissioner	Previous water supply and sanitation projects failed because of non involvement of relevant departments and community sensitization towards importance of sanitation and hygiene. Reply: Behavior Change Campaigns through project will help to improve the health and hygiene conditions by sensitization and stakeholders engagement at each step is an important component of PRSWSSP

S.No.	Name	Organization/Department	Designation	Feedback and Reply
22	Munawar Hussain Magsi	Commissioner Office (Bahawalnagar)	Assistant Commissioner	Major concern in implementation of such projects is inefficiency of line institutions, there is dire need to conduct capacity building workshops for institutions so that they can be part of implementation and maintain it afterwards Reply: Capacity Building Programs are an integral part of PRSWSSP and a training framework is also given as a baseline for implementation of training/capacity building programs
23	Mehmood Khan	Commissioner Office Bagrain	Secretary	Lack of awareness among communities is major concern. Reply: Behavior Change Campaigns through project will help to improve the sensitization and awareness among communities
24	Mian Bashir	Commissioner Office (Sikandarabad)	Secretary	Due to consumption of contaminated water, women and children are at high risk of water borne diseases Reply: PRSWSSP intervention will help to resolve the issues related to drinking water, waste water treatment, solid waste management and upgradation of sewerage and sanitation systems which will play a significant role in improving the health and sanitation issues of women and children

5.5 Consultation with NGOs

S.No	Name of NGO	Name of Expert	Comments
1.	WaterAid	Farakat Ali, Provincial Coordinator	Various water-borne diseases are reported in the project districts and result in severe malnourishment of women and children. Emphasis should be done on availability of clean water to schools as well and arrangements must be done for hand washing as part of project Lessons learned by our projects must be incorporated to ensure result-oriented and longlasting solutions to improve sanitation condition in project districts. Reply: PRSWSSP intervention will help to resolve the issues related to drinking water, waste water treatment, solid waste management and upgradation of sewerage and sanitation systems which will play a significant role in improving the health and sanitation issues of women and children
2.	Alliance for Water Stewardship	Maheen Malik, Pakistan Coordinator	All industries working in project areas must be contacted during implementation of project and must be sensitized towards responsible consumption of water resources. Reply: As part of environmental and social screening, stakeholders consultation will be given significant consideration and the industrial unit that may be contributing in the environmental or social assessment, will be consulted
3.	WWF	Taseer Ali Mirza	Participation of women is integral in successful execution of project, awareness sessions must be conducted in collaboration with local organizations Reply: Women will be the part of public consultation and BCC sessions in all the interventions

5.6 Stakeholders Consultation Framework during Implementation of PRSWSSP

Interventions

The stakeholder consultation is a continuous process and should be carried out throughout the life of project. The consultation has been carried out and reported during the present ESMF preparation in the Project Tehsils. Similarly, during the subsequent phases of Project, participation of the Project stakeholders will be ensured at each level.

Following table describes the proposed consultation framework during different phases of Project.

PRSWSSP

Table 15: Stakeholders Consultation Framework

Project Stage	Stakeholders	Consultation Tools	Responsibility
Subprojects Design	Institutional Stakeholders: relevant Provincial Departments	Consultative meetings/Workshop with all Institutional Stakeholders to deliberate on the planned project interventions and potential environmental and social risks	PIMU-PRSWSSP including Environment team
	Selected Local Communities including community based organizations, village panchayts notables and educated community of the area (School teachers and professionals, educated youth, local councilors, elected members, land owners including women etc.)	Focus Group Discussions (FGDs) in all habitations with Community Representatives on sub-projects activities disclosure and potential environmental and social risks	SDU-TO, VCs
	Communities from Low-Income backgrounds and marginal segments of the society –laborers/workers, tenants, low income farmers (including women) and other vulnerable groups including transgender, religious minorities, and people with disabilities	Focus Group Discussions in all 16 habitations with Community Representatives on potential environmental and social risks	SDU-TO, VCs
	Subprojects Affected Persons (APs) –Anyone who comes under definition of APs and requires compensation in terms of Entitlement Matrix	Focus Group Discussions or individual meetings	PIMU, SDU-TO, VCs
Subprojects Inception	Target Communities (including representation from women and vulnerable groups where relevant)	Public consultation in all 16 habitations for Information disclosure using ESMPs. Community Feedback regarding Implementation Plan, GRM, Institutional Coordination, and M&E	SDU-TO, VCs
Subprojects implementation	Beneficiaries at Local-level	Group discussions providing all relevant project details as per WB's information disclosure requirements	SDU-TO, VCs

Environmental & Social Management Framework (ESMF)

	local communities and APs	Weekly monitoring and reporting of field-level activities using pre-designed monitoring templates	SDU-TO, VCs
	Beneficiaries and local communities	Bi-monthly city-level monitoring and reporting for compliance of ESMF and environmental and social issues identified through GRM procedures	SDU-TO, VCs

PRSWSSP

CHAPTER 6 IMPACT ASSESSMENT AND RECOMMENDATIONS

This Chapter assesses the potential environmental and social impacts of the proposed subprojects activities. The chapter also provides generic mitigation measures to minimize if not eliminating the potentially negative impacts, in order to ensure that the interventions under the proposed Project do not cause environmental and/or social impacts beyond the acceptable level.

6.1. Positive Socio-economic and Environmental Impacts of PRSWSSP

Most of the Project's environmental and social impacts will be beneficial, including for example the positive effect on health caused by the reduction in Diarrhea and sanitation related diseases and the associated socio-economic benefits, considerable behavior change activities at community and district levels, and improved productivity (by the facility of oxidation ponds) and overall good sanitation and hygiene conditions.

Project Component	Environmental Benefits	Social Benefits
Water Supply & Sanitation Infrastructure Development	• Promotion of health and hygiene • Better health and hygiene practices will ultimately result in good health and nutrition conditions of the women and children • The project will create an open defecation free environment that will help to eliminate sanitation & hygiene problems at grass root level and deliver significant impact on health outcomes. • There are significant non-quantifiable social benefits, especially health related benefits. The decrease in morbidity rates, and infant mortality, are visible benefits. The access to clean water & sanitation will significantly reduce incidence of water & sanitation borne diseases, and other illness, and the resultant productivity loss due to absenteeism from work place. As these benefits are difficult to quantify, but are related to general environmental condition of the beneficiaries • It will reduce water and air pollution • Human health will be safeguarded, reduction in water	• Community Awareness on health and hygiene • Extensive social mobilization will engage the overall village community under one objective of health and hygiene • Job creation and employment opportunities for educated youth. • Skilled and unskilled labor will work on the schemes to earn money for project time period and economic activities will be developed. • There are significant non-quantifiable social benefits, especially health related benefits. The decrease in morbidity rates, and infant mortality, are visible benefits. The access to clean water & sanitation will significantly reduce incidence of water & sanitation borne diseases, and other illness, and the resultant productivity loss due to absenteeism from work place. As these benefits are difficult to quantify, but are related to general

	& sanitation borne diseases, reduction in mortality rate and malnutrition etc. • Awareness among the society about health hazards associated with drinking contaminated water poor sanitation will positively impact their living standards. • Awareness on health and hygiene will be helpful to reduce flood-related health impacts and disease prevention. • Promotion of sustainable and judicious usage of natural resources. • Lack of adequate waste water drainage and sanitation is one of the major causes of the high prevalence of water & sanitation related diseases in villages. With the better sanitation facilities in villages, the communities will experience good environmental changes. • The sewerage system will provide a healthier and more appropriate way to manage liquid wastes • With the operation of the sewerage system, pollution of ground water will be controlled which is seriously deteriorated by the discharge of sewage waste in the area. • Water is a substantial natural resource and it will be managed and reused in the best possible manner. • Moreover, uncontrolled flooding and the flow of surface water causes nuisance and public health problems, development of mosquitoes, accumulation of litter, • pollutants which will be minimized • Better environmental and aesthetic conditions • Ground water quality deterioration will be controlled	environmental condition of the beneficiaries. • To ensure sustainable access of masses to improved sanitation will eliminate their sense of deprivation. • Inclusive facilities will reduce the work load of a family and open up educational and employment opportunities with ultimate result of poverty reduction. • Women and girls will get access to safe sanitation facilities at their homes which is quite safer and hygienically better for their health • Safe sanitation access will have a very good impact on women and girls • Business of Manufacturers / Entrepreneurs engaged in Water and Sanitation supplies will be developed or grown • Will generate local employment • Social conflicts (due to wastewater disposal at neighbor's door and at street) will be handled by a technical solution. • It will bring economic development in the project areas. • Facility of sewerage /covered drainage will motivate the HHs to construct toilets at their homes as now many of them are reluctant due to lack of sewerage systems. • The upgradation of sewerage/covered drainage systems will reduce the social and financial consequences resulting from the direct damage to properties caused by
--	--	---

	• Better health and hygiene will improve the health and prevent diseases • Treated liquid waste will be used for agriculture activities and in crop fields that will enhance their productivity. • Fertile lands which are under threat due to water shortages may be irrigated up to some extent	flooding, or even destruction of basic infrastructure such as roads, pavements and houses. • It will also reduce any indirect damage caused by traffic congestion and minimize the pedestrian difficulties
Engagement of Village Panchayats/Councils & NGOs	• VCs and local NGOs (to be engaged in social mobilization component) will be introduced with the environment best management practices which will be asset for their future endeavors. • VCs will play an important role in the overall promotion of best health and hygiene practices in their village and overall safe environmental conditions	• By streamlining the functioning and roles of VCs, social cohesion and stability amongst villagers will be promoted and they will play a positive role in the betterment of their community • Women participation and mobilization will activate the women community and they will participate in the decision making processes. • Ownership of project through communities and VCs will enhance the social benefits of overall investment • Women will be engaged as change agents and will help develop their skillset and provide informal employment. • Empowerment of women through awareness and inclusive approach will reduce gender issues, enhance decision making
Bahaviour Change Campaign	• Better environmental and aesthetic conditions • Better health and hygiene practices • Promotion of sustainable and judicious usage of natural resources	• Community Awareness on health and hygiene • Extensive social mobilization will engage the overall village community under one

		objective of health and hygiene • Job creation and employment opportunities for educated youth. • Skilled and unskilled labor will work on the schemes to earn money for project time period and economic activities will be developed. • There are significant non-quantifiable social benefits, especially health related benefits. The decrease in morbidity rates, and infant mortality, are visible benefits. The access to clean water & sanitation will significantly reduce incidence of water & sanitation borne diseases, and other illness, and the resultant productivity loss due to absenteeism from work place. As these benefits are difficult to quantify, but are related to general environmental condition of the beneficiaries • To ensure sustainable access of masses to improved sanitation will eliminate their sense of deprivation. • Inclusive facilities reduce, work load of family, open up educational and employment opportunities for poverty reduction
Waste Mangement	waste management will improve the environmental conditions	waste management will improve the Social conditions
Institutional Strengthening for Improved Service Delivery	• ESMF compliance • Mitigation of environmental issues and monitoring of ESMP will	• Effective and transparent project management. • Accountability and transparency

	improve the existing environmental conditions. • PIMU at LGC&DD will be technically strengthened by the presence of Environmental Safeguards Specialist	• Quality assurance and effectiveness • Time Management • Knowledge Management • Communication and Reporting System • Coordination and Team Building • Generation of skilled and trained HR • Presence of Environment and Social Safeguards team and Gender Specialist will be an asset for LG&CDD as currently Tehsil Officers have no technical capacity for compliance of social and environmental safeguards. • Awareness raising through dissemination of information, virtual training, and communications • Community feedback and complaint redressal mechanism will be strengthened. .
--	--	---

6.2. Expected Negative Socio-economic and Environmental Impacts of PRSWSSP

Project	Environmental impacts	Social Impacts
---------	-----------------------	----------------

During Construction	Most of the adverse environmental impacts will arise during the construction stage and will be related to ✓ soil and water contamination due to improper project siting, exploitation of groundwater, ✓ improper disposal of waste, ✓ contamination of open irrigation water channels to be used as a source, ✓ excavation and digging of trenches for laying pipes, excessive noise related to use of machinery, ✓ vehicular movement. ✓ Health & safety	Land Acquisition Labor Influx Child labor Minimum wages Enchroachment/squatter GBV SEA/SH Women Privacy
Operation	Similarly, the impacts during operation phase may include health and safety issues if chlorine is used for water treatment/disinfection and it is not handled properly; and possibility of bad smell and breeding place for mosquitos if the wastewater treatment facilities were not properly operated. Most of these impacts are however moderate, temporary, site specific, reversible and can be managed through simple and cost-effective mitigation measures.	

Chapter 7 ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

This chapter presents the Environmental and Social Management Framework (ESMF) for the PRSWSSP.

7.1. Environmental and Social Safeguards Processing Steps

Implementation of environmental and social safeguards will follow the following procedures closely linking with activity planning, design and implementation steps.

Step 1: Preliminary Environmental Information (Physical, Biological and Socioeconomic baseline data collection) and Analysis

Step 2: Environmental and Social Screening and Categorization of each Sub-Project -using E & S Screening Checklist (Attached as **Annexure N**).

Step 3: Information Disclosure & consultations

Step 4: Preparation of Environmental and Social Management Plan (ESMP)/SMP and inclusion of social and environmental mitigation costs in the Sub-project document/cost

Step 5: Implementation of ESMPs by the contractors as the ESMP cost will be the part of BOQ.

Compliance of environmental & social safeguards will be carried out by the contractor.

Step 6: Environmental Clearances of ESMPs and SMPs from World Bank

Step 7: Inclusion of Environmental and social specifications and Environmental and Social Management Plan (ESMP) in bid documents.

Step 8: Inclusion of Environmental and social mitigation measures in BOQs and contractors agreement

Step 9: Monitoring the compliance of environmental & social safeguards in field by PMIU.

Based on type of construction, all preliminary information analysis, Environmental Assessments, Environmental Management Plans must be completed prior to awarding of contracts for construction.

7.2. Subprojects Environmental and Social Screening

All activities proposed for the subprojects shall undergo initial screening through a number of filters that include screening environmental and social impacts.

The ESMF categorizes subprojects on the basis of their nature of activities, and potential impacts on environment and or people and their livelihoods. 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. Since exact extent and precise location of individual interventions (subprojects) to be implemented under the PRSWSSP are not known at this stage, a framework approach has been adopted for the present environmental and social assessment. Under this approach, each subproject will be screened for the severity and extent of environmental and social impacts. Subprojects having negligible environmental and or social impacts will be assessed with the help of a Screening Checklist attached as **Annexure N**. Subprojects having some negative but localized environmental and or social impacts will require a generic Environmental and Social Management Plans (ESMPs) to be prepared as presented in section 7.4. Also, the RPF will only apply to interventions where land may be acquired for large-scale interventions (Please refer Chapter 8).

The Components of the project which may have adverse social and environmental impacts will include following activities:

- Water supply subprojects
- Sanitation infrastructure subprojects
- Waste Management
- Wastewater Treatment Subproject

PRSWSSP subprojects can potentially cause environmental and social impacts. However, exact nature, extent, and location of these subprojects will be known once these projects are identified. The potential impacts of generic nature have nonetheless been screened using the E&S Screening Checklist is attached as **Annexure N**. Chance find Procedure for PCRs is Attached as **Annexure O**

All the subprojects of PRSWSSP will have to go through social and environmental screening process using the Social and Environmental Screening Checklist (attached as **Annexure N**).

7.2.1. Analysis of Alternatives

The analysis of the alternatives is a part of ESMF to select the best among all possible project options. The alternatives of a project/Project are defined as the options that can help to meet the objectives of a project by different means including alternative project sites, technology or material, design or inputs. The key criteria when identifying alternatives is that they should be feasible and reasonable, environmentally sustainable and socially acceptable.

Selection of preferred alternative is based on scores of factors including cost, schedule of delivery, environmental and social impact and the cost for their redressal. Following different types of alternatives

will be assessed during preparation of the sub-project instrument depending upon its environment and social category:

- No action alternative
- Design alternative
- Site alternatives
- Technological alternatives
- Any type of alternative relevant to the type of sub-project.

As per MMP feasibility report carried out in the project to assess various sanitation and water supply technologies' applicability. For **water supply**, the solutions account for options based on trunk level connectivity of major settlements through pumpage of freshwater lenses isolated solutions for scattered settlements that cannot avail trunk level connects but overlie freshwater lenses areas with thin freshwater lenses that could only be mined with scavenger wells unlikely to cause any significant drawdown rainwater harvest for areas unlikely to sustain fresh groundwater harvest.

In areas where freshwater availability is acutely short, the Consultants recommend supplemental water storage through household level rooftop 'rainwater harvesting'. The collection estimates would vary, but it is safe to assume that rainfall intensity across even the dry zones would enable collection across sporadic event. For **Wastewater treatment** ABR / BTF have been proposed for local wastewater treatment according to the design criteria. These technologies are easily adaptable to larger catchments. ABR / BTF are well suited for rural areas as no trained technician is required to operate and maintain the system. The maintenance is limited to the removal of accumulated sludge and scum every 1 to 3 years. **Soakage well configuration** is flexible towards volumetric variations and is particularly suited to small catchments. Moreover, the technology is well suited for small catchments of rural areas. The Comparison of alternative is attached as **Annexure P**.

7.2.2.Subprojects Siting and land issues (financed under PRSWSSP)

It will be ensured through screening checklist that the subprojects of PRSWSSP shall avoid any sensitive locations as well as land acquisition. In case of PRSWSSP, Sub-project sites will be located within community owned. However, preliminary screening will be undertaken to ensure that the land used for subprojects is Government owned and does not belong to the community and there is no dispute over it. For construction of oxidation ponds, community land will be acquired through Voluntary Land Donation (VLD) (Format for VLD Procedures is given in **Annexure Q**).

PRSWSSP exacting agency i.e. LG&CDD will completely avoid private land acquisition (other than land donation by the community. Whenever there is additional land requirement (temporary or permanent) other than community donation, the PIMU will follow the Resettlement Policy Framework (RPF). Involuntary Resettlement Checklist is attached as **Annexure R**.

7.2.3.Environmental Screening and Categorization of Sub-Projects

E & S Screening Checklists (attached as **Annexure N**) will be used to for environmental and social screening of the subprojects and further documentation requirements as per the sub-projects categorization. This classification is preliminary and will be finalized when the exact locations and scale of the sub-projects are identified and screening checklist will be filled in for each of the sub-project.

E-1 category of sub-projects- All those sub-projects having negative environmental impacts of severe nature (significant, widespread, irreversible and/or unprecedented will be categorized as E-1; though it is expected that no sub-projects will fall under E-1. *However, such type of subprojects will not be financed by WB under PRSWSSP.*

E-2 category of sub-projects- All those subprojects having negative environmental impacts of moderate nature will be categorized as E2 and for such projects, preparation & Submission of Environmental & Social Management Plan will be necessary

E-3 category of sub-projects-All those subprojects having no or minimal negative impact on environment, will be categorized as E3 and for such subprojects, no further environmental assessment will be required, however, preparation and submission of E & Social Screening Checklist will be required and any minor impact if assessed through screening checklist will be mitigated accordingly.

- **S-1 category of sub-projects**-All those sub-projects having **200 or above affected persons**⁵³ will be categorized as S-1 and for S-1 projects, preparation & Submission of a Resettlement Action Plan (RAP) will be mandatory. *However, such category of subprojects will not be financed by WB under PRSWSSP.* (In case of other social impacts if identified, Social Management Plan (SMP) will be prepared and made part of ESMP or ESIA).
- **S-2 category of sub-projects**-All those sub-projects having **less than 200 affected persons** will be categorized as S-2 and for S-2 category of sub-projects, preparation and submission of an Abbreviated Resettlement Action Plan (ARAP) will be mandatory (In case of other social impacts (if identified) Social Management Plan (SMP) will be made part of ESMP or ESIA).
- **S-3 category of subprojects**-All those sub-projects having no negative social impacts will be categorized as S-3 and for S-3 category of sub-projects, preparation and submission of E & Social Screening Checklist will be required and no further process of instruments preparation will be needed.

Table 16: PRSWSSP Sub-Projects Environmental Screening and Categorization

Project Categories	Type of Subprojects	Nature of Environmental Issues	Env. Category	Instruments Required
Sanitation Infrastructure Development				
Drainage Works	Construction of networks of underground sewer lines, covered drains,	May have some negative but localized environmental and social impacts	E-2	ESMP

⁵³ .in terms of land acquisition and resettlement

Project Categories	Type of Subprojects	Nature of Environmental Issues	Env. Category	Instruments Required
	Construction of covered drains,	May have some negative but localized environmental and social impacts	E-2	ESMP
Fecal Sludge Collection	Pour flush toilets with two/three stage septic tanks:	May have insignificant Environmental Impacts	E-3	NA
	Pour flush toilets with combined (multi-house) septic tanks:	May have insignificant Environmental Impacts	E-3	NA
Skimming wells adjacent to main or branch canals		May have insignificant Environmental Impacts	E-3	NA
Direct pumping of groundwater from unconfined aquifers		May have insignificant Environmental Impacts	E-3	NA
Water Supply Infrastructure	Overhead storage tanks	May have insignificant Environmental Impacts	E-3	NA
	Distribution Lines	May have insignificant Environmental Impacts	E-3	NA
	Transmission lines	May have insignificant Environmental Impacts	E-3	NA
	Handwashing Stations	May have insignificant Environmental Impacts	E-3	NA
Wastewater Techniques	Anaerobic Baffled Reactor	May have insignificant Environmental Impacts	E-3	NA
	Oxidation Ponds:	May have some negative to significant environmental and social impacts depending upon the scope of work	E-2	ESMP
	Bio trickling Filters	May have significant environmental impacts	E-3	NA
	Septic Tank	May have some negative but localized environmental and social impacts	E-2	ESMP
Waste Management Infrastructure	Collection of waste	May have significant environmental impacts	E-3	NA
	Composting	May have significant environmental impacts	E-3	NA
	Transportation of waste	May have significant environmental impacts	E-3	NA
	Facilitation for recyclable waste	May have significant environmental impacts	E-3	NA

7.2.4. Integration of Environmental and Social Safeguards Management in Scheme Life Cycle

The environmental and social management procedure described in 7.1 above will be seamlessly integrated within the scheme identification, preparation, appraisal, approval, and implementation cycle. Environmental and social screening (described in Section 7.2) will be carried out at the scheme identification stage. The scheme-specific ESMPs will be prepared during the scheme preparation/appraisal stage. Finally, ESMPs will be implemented during the scheme implementation stage.

7.2.5. Preparation of Subprojects

During preparation stage, the PD at PIMU will include the following details in sub-project proposal:

- i. Technical aspects** such as details on suitability of sub-project site; availability and appropriateness of inputs, and proven experience with the technology offered, engineering designs, construction or rehabilitation, operation and maintenance arrangements etc.;
- ii. Economic aspects** such as cost estimates, financial operating plan, economic and financial viability, and adequacy of proposed financing;
- iii. Organizational aspects** such as institutional, legal and contractual framework; risk analysis; necessary clearances from regulatory entities and
- iv.** Each sub-project will be environmentally and socially **screened** according to the criteria defined in **Section 7.2**. The screening will be done on the format as provided in the form of Environment & Social Screening Checklist given in **Annexure N**.

Environmental and Social Screening will be carried out by the Environmental/ Water Quality Officer at SDU-TO under guidance of Environment Safeguards Specialist based at PIMU.

7.2.6. Subprojects Appraisal

During sub-projects appraisal stage, the following activities will be performed:

- i. Review of the technical aspects such as details on suitability of sub-project site; availability and appropriateness of inputs, and proven experience with the technology offered, engineering designs, and construction or rehabilitation, operation and maintenance arrangements;
- ii. Review of the economic aspects such as cost estimates, financial operating plan, economic and financial viability, and adequacy of proposed financing;
- iii. Review of the organizational aspects such as institutional, legal and contractual framework; risk analysis; and necessary clearances from regulatory entities; and

If the Scheme is categorized as having some negative and localized social and environmental impacts, an ESMP will be prepared (template given in **Annexure S**). For the scheme categorized as having negligible social and environmental impacts, no further environmental /social assessment will be needed. ESMPs will be prepared by the Environmental/ Water Quality Officer at SDU-TO under guidance of Environment Safeguards Specialist and Social Safeguards Specialist based at PIMU.

During the appraisal stage, the environmental and social appraisal shall focus on the following aspects:

- Compliance with regulatory requirements and clearances;
- Comprehensiveness of the ESMP in light of the activity specific environmental and social issues;
- Integration of environmental and social measures in to the design wherever relevant;
- Arrangements for implementation of ESMP, including institutional capacity and contractual provisions;
- Inclusion of ESMP budgets in the scheme cost;

- ESMP monitoring and reporting arrangements;
- Adequacy of the social issues identified and suggested mitigation measure;

The ESS and SSS based at PIMU will ensure that the above requirements are fulfilled. VLD documents/procedures will be cleared by WB. Final clearance of each ESMP lies within WB.

7.2.7. Subprojects Implementation

The sub-project will be approved once all the technical requirements are fulfilled and the ESMP/VLD procedures and documentation is cleared. As stated above, ESMPs and VLD documents will be approved by the WB.

The ESMP of each sub-project will be included in the bidding documents and the contracts. In this manner, the ESMP will be included in the overall scope of works/services and BOQs, and the contractor will implement the mitigation measures included in the ESMP alongside other works/services included under the contract.

7.2.8. Monitoring, Audit and Evaluation

PIMU will monitor the contractor to ensure complete and proper implementation of the works/services in accordance with the contract.

During this phase, environmental and social monitoring will be carried out to ensure that the mitigation measures given in the ESMP are effectively implemented. The environmental and social monitoring will include the following:

- Environmental and social monitoring to ensure effective implementation of ESMPs and SMPs particularly the mitigation measures included in these documents.
- The monitoring will be conducted with the help of checklists prepared on the basis of the mitigation plans included in environmental and social management instruments.
- Frequent site visits
- Laboratory analysis will be conducted if so specified in the ESMPs.
- Photographic records will be maintained where applicable/useful.
- Preparation of monitoring reports.

Monitoring Checklist is attached as **Annexure T**.

7.2.9. Third Party Monitoring Consultant

PIMU will engage an independent Third Party Monitoring Consultant (TPM) firm to verify Project results on a timely manner to provide the basis for disbursements of funds under the Project to the participating TCs. The assessment results will be shared simultaneously with the World Bank and GoPunjab to ensure transparency.

Table 17: Environmental/Social Assessment and Management Process

Milestones/ Objectives	Process	Responsibility	Decision/Outcome
1. Scheme Screening			
Screen from environmental/ social and land requirements perspective	Environmental and Social Screening Report based upon the Rapid Assessment Checklist including categorization for further documentation requirements Land Requirements Status based upon the VLD Checklist including categorization for further documental procedures.	SDU-TO Review by PIMU (ESS, SSS and Gender Specialist)	Environmental /social and land requirements categorization of scheme; Determination of type of assessment needed (ESMP or no further procedures; VLD documents and procedures or no further assessment)
2. Scheme Appraisal			
Detailed Environmental and Social Appraisal	Preparation of ESMP Preparation of VLD Documents and necessary procedures	SDU-TO	- Completed ESMP - Completed VLD Documentation /Procedures - Approved By World Bank (first 05 ESMPs atleast)
	Review of ESMP	Review by PIMU	
3. Sub-Projects Implementation			
Finalization of Contract Agreement	Include ESMP in bidding documents and contracts	PIMU	ESMP included in contracts
Sub-Projects implementation	E&S safeguards studies implementation alongside the other civil works	Contractor	ESMP implemented.
4. Monitoring, Audit and Evaluation			
Monitoring	Environmental and social monitoring to ensure effective implementation of mitigation measures included in ESMP	SDU-TO PIMU	Monitoring Reports
Third Party Monitoring	Third-Party Validation (TPV) that will be conducted three times during the life of the project.	PIMU (through outsourcing)	Assessment Reports

7.3. Institutional Arrangements

Administrative arrangements for implementation of the Project are following:

Following will be the implementation arrangement under the Project.

Project Management & Implementation Unit-at LG&CDD

There will be the Project Director (PD) of PRSWSSP based at PIMU of LG&CDD, who will be assisted with team of experts, officers and supporting staff. Project management and administration of funding;

- Ensuring execution of the project as per action plan
- Overall implementation and monitoring of ESMF and ensure the hiring of Consultants/consultancy firm to conduct TPV Reports
- Capacity building of the staff and personnel.

Service Delivery Units (SDU) at Tehsil level (SDU-TO)

The SDU will generally be responsible for:

- Ensuring execution of the project as per action plan
- Support and coordinate with ESS and SSS throughout implementation of ESMF at district/field level
- E& S Screening
- ESMP preparation
- Inclusion of cost in BOQs of Contractor
- Monitoring
- Reporting to the Project Director on progress and strategies
- *Environmental/Water Quality Officers will prepare SMP & ESMP under the supervision of PIMU and consultant would be hired for preparation and submission of ARAP/RAP.*

Third Party Validation/ Monitoring - The effectiveness of the safeguards implementation will be reviewed and assessed 3 times during the life of the project by engaging third party validation/ monitoring.

Table 18: Positions and Responsibilities under Proposed Implementation Framework

Sr.#	Association	Position	Responsibilities
1.	PIMU	Project/Project Director (PD)	• PD will be overall responsible for ensuring the ESMF compliance throughout the project. • PD will be responsible to organize extensive Training/Capacity Enhancement Programs for PIMU and SDU-TO staff for successful implementation of ESMF • PD will be responsible for maintaining all the necessary records/documents (e.g. Screening reports, ESMPs, VLD documents, ARAP, monitoring reports, Quarterly and annual ESMF compliance reports, annual TPV Reports, training reports etc.)

			• PD will be responsible to share the progress reports and other document with WB counterparts as and when required. • PD will ensure transparent and cost effective monitoring. • PD will engage other specialists and/or firms to carry out external monitoring of ESMF compliance as Third Party Validation.
2.	PIMU	Deputy Project Director (DPD)	As per directed by PD, DPD will supervise all the activities carrying out at PIMU and field offices for ESMF compliance throughout the project. DPD will supervise the ESMF teams in maintaining all the necessary records/documents (e.g. Screening reports, ESMPs, monitoring reports, Quarterly and annual ESMF compliance reports, annual TPV Reports, training reports etc.)
3.	PIMU	Environmental Safeguards Specialist (01)	Responsible for overall implementation of ESMF processes and procedures in the light of WB policies and Guidelines and local policies and procedures Closely follow up the integration of safeguard assessment information and inclusion of safeguards self-screening process at the project development and design stage Provide technical support during proposal development, project design, appraisal process and resource mobilization plan for the sub projects in all locations Undertake follow up monitoring to ensure that proposed mitigation measures are implemented according to an agreed upon environmental and social mitigation implementation plan Closely provide assistance and design capacity building / training program for overall implementation of ESMF from PIMU to village level and deliver capacity building trainings to the field teams to close knowledge/skill gaps and minimize the likelihood of risks to happen to sub projects Ensure that appropriate environmental and social mitigation measures are proposed and met Undertake follow up monitoring to ensure that proposed mitigation measures are implemented according to an agreed upon environmental and social mitigation and implementation plan At PIMU level, maintain the record of all information, documents evidence and reports including progress reports,

			TPV Reports, training reports, ESMPs and Screening Checklists etc. Closely work with SSS and Gender Specialist at PIMU level and provide technical assistance and advice to the Environment/ Water Quality Officers based at SDU-TO
4.	PIMU	Social Safeguards Specialist (01)	Responsible for overall implementation of social safeguard of ESMF and RPF and VLD processes and procedures in the light of WB policies and Guidelines and local policies and procedures Closely follow up the integration of safeguard assessment information and inclusion of safeguards self-screening process at the project development and design stage Provide technical support during proposal development, project design, appraisal process and resource mobilization plan for the sub projects in all locations Review all the E&S Screening checklists from social safeguards point of view and ensure the correct categorization of each subproject and visit the project sites for Resettlement Checklists (if required) Overall responsible for implementation of GRM and Public Disclosure of Information processes and procedures Undertake follow up monitoring to ensure that proposed mitigation measures are implemented according to an agreed upon mitigation and implementation plan Closely provide assistance and design capacity building / training program for overall implementation of social safeguards and RPF from PIMU to village level and deliver capacity building trainings to the field teams to close knowledge/skill gaps and minimize the likelihood of risks to happen to sub projects Ensure that appropriate social mitigation measures are proposed and met prepare SMPs either separately or integrated with ESMPs Undertake follow up monitoring to ensure that proposed mitigation measures are implemented according to an agreed upon social mitigation and implementation plan Assist PIMU in hiring consultants (if required for preparation of ARAPs) At PIMU level, maintain the record of all information, documents evidence and reports including progress reports,

			TPV Reports, training reports, SMPs/ ARAPs and Screening Checklists etc. Closely work with ESS and Gender Specialist at PIMU level and SDU-TO team
5.	PIMU	Gender Specialist (01)	Ensure implementation of World Bank Gender guidelines and policy Provide direct technical assistance and guidance on women's economic empowerment to the PRSWSSP and its delivery partners. Support the development of tools, systems, processes and approaches that continuously improve technical excellence and impact in the area of transformative approaches to women's economic empowerment. Lead, coordinate, support, and/or conduct gender and power analyses, effectiveness and efficacy studies, appraisal, evaluation and needs assessments as required by the PRSWSSP. Assist with quantitative/qualitative assessments in targeted communities to assess effectiveness of interventions and impact. Support delivery partners to understand the role of gender equality and women's economic empowerment for the PRSWSSP impact groups. Ensure gender equality and women's economic empowerment criteria are well integrated into market-systems approaches. Work closely with other technical specialists to integrate gender across all PRSWSSP components. Facilitate and support a strong learning and knowledge sharing community around gender-transformative practices amongst delivery partners. Represent work being done in gender-transformation and women's economic empowerment under the PRSWSSP in relevant internal and external forums.
6.	SDU-TO	Environment /Water Quality Specialists (16)	Work under respective SDU-TO with technical supervision of ESS based at PIMU Carry out E&S Screening of each sub-project as per Screening Checklist and categorize the subprojects as per nature, severity and type of environmental impacts Prepare ESMPs for E-2 categories projects with the technical support of ESS based at PIMU Closely follow up the integration of safeguard assessment information and completion of safeguards self-screening Checklist during the project development process

			Provide technical support during proposal development, project design, appraisal process and resource mobilization plan for the sub projects in all locations Closely provide assistance and deliver capacity building training to the field teams and Panchayt/Village Councils to close knowledge/skill gaps and minimize the likelihood of risks to happen to sub projects Ensure that appropriate environmental and social mitigation measures are proposed and met; Undertake follow up monitoring to ensure that proposed mitigation measures are implemented according to an agreed upon environmental and social mitigation implementation plan; Closely follow up the integration of safeguard assessment information and completion of safeguards self-screening Checklist during the project Prepare Environmental and Social safeguard Plans and ensure that such plans are approved by relevant authorities before implementation Prepare report (monthly, quarterly, field monitoring) on the safeguard risks with appropriate actions to be taken for all sub projects and ensure that timely actions are taken. PMIU (provincial office) will have environmental, social development and gender experts who will be combinely responsible for all aspects of E&S. They will be supported by 16 environmental water quality experts, housed one-each in each tehsil offices i.e. SDU-TO. PMIU will maintain and run an MIS system which will have a range of information, data, financial records, water quality reports, complaints, etc. Daily monitoring and followup will be SDU task to ensure complaints are addressed. SDU will also make frequent monitoring visits.
--	--	--	--

7.4. Environmental and Social Management and Monitoring Framework

The anticipated Environmental and Social potential impacts at subprojects-levels are present in the below:

Table 19 : Environmental and Social Management and Monitoring Framework (Construction of networks of underground sewer lines, covered drains, Drainage Works ⁵⁴

Sanitation Infrastructure Development								
Subprojects Category: Construction of networks of underground sewer lines, covered drains, Drainage Works								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
1.	Disturbance/damage to existing utilities on the sites (electric poles and wires, water lines within proposed project sites)	- Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during construction phase - Conduct detailed site surveys with the construction drawings and discuss with the respective agencies during the construction phase before ground clearance; and - Require construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services. (This will be ensured that prior information to communities	To check these aspects	Contractor	PIMU/SDU	Before execution of work	Before execution of work	Part of project cost

⁵⁴ This proposed/generic standard table may be used as referral template of ESMP. Generic ESMP is also attached as Annexure R.

Sanitation Infrastructure Development Subprojects Category: Construction of networks of underground sewer lines, covered drains, Drainage Works								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		about potential disruption has been communicated).						
2.	Sewer network – contamination to water supply or water bodies, leak, block or overflow	- Limit the sewer depth where possible. - Sewers shall be laid away from water supply lines and drains (at least 1 m, wherever possible); - Where possible, the sewer line should be laid deeper than the water pipeline (the difference between top of the sewer and bottom of water pipeline should be at least 300 mm) - In unavoidable, where sewers are to be laid close to storm water drains or canals or natural streams, appropriate pipe material shall be selected (stoneware pipes shall be avoided) - For shallower sewers, use small inspection chambers in lieu of manholes; - Design manhole covers to withstand anticipated loads & ensure that the covers can be readily replace if broken to minimize silt/garbage entry	Check the design details	Contractor	PIMU/SDU	Before & during execution of work	Before & during execution of work	Part of project cost

Sanitation Infrastructure Development Subprojects Category: Construction of networks of underground sewer lines, covered drains, Drainage Works								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		• May be sse of solar power and where possible”Equip pumping stations with a backup power supply, such as a diesel generator, to ensure uninterrupted operation during power outages, and conduct regular maintenance to minimize service interruptions. Consider redundant pump capacity in critical areas • Establish routine maintenance Project, including: • regular cleaning of sewer lines to remove grease, grit, and other debris that may lead to sewer backups. Cleaning should be conducted more frequently for problem areas. • Inspection of the condition of sanitary sewer structures and identifying areas that need repair or maintenance. Items to note may include cracked/deteriorating pipes; leaking joints or seals at manhole; frequent line blockages; lines that generally flow at or near capacity; and suspected infiltration or exfiltration; and						

Sanitation Infrastructure Development Subprojects Category: Construction of networks of underground sewer lines, covered drains, Drainage Works								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		- Monitoring of sewer flow to identify potential inflows and outflows - Conduct repairs prioritized based on the nature and severity of the problem. Immediate clearing of blockage or repair is warranted where an overflow is currently occurring or for urgent problems that may cause an imminent overflow (e.g. pump station failures, sewer line ruptures, or sewer line blockages); - Review previous sewer maintenance records to help identify “hot spots” or areas with frequent maintenance problems and locations of potential system failure, and conduct preventative maintenance, rehabilitation, or replacement of lines as needed; - When a spill, leak, and/or overflow occurs, keep sewage from entering the storm drain system by covering or blocking storm drain inlets or by containing and diverting the sewage away from open channels and other storm drain facilities						

Sanitation Infrastructure Development Subprojects Category: Construction of networks of underground sewer lines, covered drains, Drainage Works								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		(using sandbags, inflatable dams, etc.). Remove the sewage using vacuum equipment or use other measures to divert it back to the sanitary sewer system.						
4.	Impacts due to excess excavated earth, excess construction materials, solid waste etc. Occupational hazards which can occur to workers and public during work.	• Proper disposal of surplus / excavated earth. And also efforts to minimize the quantity of surplus earth by better planning to use this earth for embankment /depression filling etc. PPE (helmet, gloves, boots, etc.) details for each type of work • Details of materials at each site (type & quantity) • Risks/hazards associated with the work (for example, Trench excavation will have risks such as trench collapse, persons/vehicles falling into trench, structural risk to nearby buildings, damage to buildings, infrastructure etc.) Construction waste/debris generated (details & quantity) Detail the sequence of work process (step-by-step) including specific details of each work	• Site inspection and record verification; Site specific • OH & S plan; Spoil and waste management plan • Complaints from sensitive receptors and public	Contractor	PIMU/SDU	During construction	During construction	Nil

Sanitation Infrastructure Development Subprojects Category: Construction of networks of underground sewer lines, covered drains, Drainage Works								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		- Contractor's supervision & management arrangements for the work - Emergency: Designate (i) responsible person on site, and (ii) first aider - Typical site layout plan including pipe trenching, placement of material, excavated earth, barricading etc. - The pipeline/sewers are to be laid along the roads. - The excavated soil, placed sprayed with water if generating dust. - The following should be included in the site layout plan: Provide barricading/security personnel at the site to prevent entry/trespassing of pedestrian/vehicles into the work zone. - Location of temporary stockpiles and provision of bunds - Separation of stockpiles areas with workers/vehicle movement paths to avoid disturbing the stockpiled soil						

Sanitation Infrastructure Development Subprojects Category: Construction of networks of underground sewer lines, covered drains, Drainage Works								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		Wetting of soil to arrest dust generation by sprinkling water.						
6.	Disruption to traffic flow and sensitive areas and receptors	- Prioritize areas within or nearest possible vacant space in the subproject location; - Construction work camps shall be located at least 200 m from residential areas - Do not consider residential areas; for stockpiling the waste/surplus soil; - Material stockpiles shall be protected by bunds during the monsoon to arrest the silt laden runoff into drains	Inspect placement of refuse bins	Contractor	PIMU/SDU	Before & During construction	Before & During construction	An estimated budget for ESMF implementation
7.	Dust and emissions from construction activity may	- Damp down exposed soil and any stockpiled - on site by spraying with water when necessary during dry weather; - Bring materials (aggregates, sand, etc. gravel) as and when required; - Use tarpaulins to cover sand and other loose material when transported by vehicles;	Site inspection	Contractor/Consultant	PIMU/SDU	During construction	During construction	Nil

Sanitation Infrastructure Development Subprojects Category: Construction of networks of underground sewer lines, covered drains, Drainage Works								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		• Clean wheels and undercarriage of vehicles prior to leaving construction site • Fit all heavy equipment and machinery with air pollution control devices which are operating correctly;						
8.	High noisy construction activities may have adverse impacts on sensitive receptors and structures	• Construction work shall be limited to day light hours (6 AM to 6 PM). • Provide prior information to the local public about the work schedule; • Ensure that there are no old and sensitive buildings that may come under risk due to the use of pneumatic drills; if there is risk, cut the rocks manually by chiselling; • Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and portable street barriers the sound impact to surrounding sensitive receptor; and • Maintain maximum sound levels not exceeding 80 decibels (dba)	Site inspection	Contractor/SDU /Consultant	PIMU/SDU	During construction	During construction	Nil

Sanitation Infrastructure Development Subprojects Category: Construction of networks of underground sewer lines, covered drains, Drainage Works								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		when measured at a distance of 10 m or more from the						
9.	Impacts on surface drainage and water quality due to contaminated runoff from construction areas in monsoon	• Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets • Stockpiles shall be provided with temporary bunds • Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, consult with Implementing Agency on designated disposal areas • Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies • Place storage areas for fuels and lubricants away from any drainage leading to water bodies • Dispose any wastes generated by construction activities in designated sites	Site Inpsection	SDU-TO	PIMU/SDU	During construction	During construction	Nil
10.	Labor influx related issues also including SEA/SH and management of	• Labor management plan prepare and implemented as a part of the ESMP.	Complaints records	Contractor	PIMU/SDU	During construction	During construction	

Sanitation Infrastructure Development								
Subprojects Category: Construction of networks of underground sewer lines, covered drains, Drainage Works								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
	COVID-19 during construction. ⁵⁵	Training of labor on these aspects ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects-WorldBank Guidelines & Health & Safety SOPs for construction Workers/Sector for COVID-19 is attached as Annexure U.						
11.	Child labor & minimum wages	Standard clause in the contracts related to child labor explicit prohibitions, etc) and contractor will ensure compliance to the contractual provisions on bonded and child labor, equal wages for similar work explicit prohibitions, etc)	Site Observation and ensure that no child as working at site as labor ID Checking	Contractor	PIMU/SDU	During construction	During construction	

⁵⁵ ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects-WorldBank Guidelines & Health & Safety SOPs for construction Workers/Sector for COVID-19

Table 20: Environmental and Social Management and Monitoring Framework (Improvement/Rehabilitation/Construction of Community Septic Tanks/Toilets)⁵⁶

Sanitation Infrastructure Development								
Subprojects Category: Liquid Waste Management								
Improvement/Rehabilitation/Construction of Community Septic Tanks/Toilets								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
1.	Land acquisition and resettlement Elite Capture Social Acceptability	- The subprojects will be established on the land owned by community or Government land .Community land will be acquired through VLD procedure. If VLD will not be possible, the RPF as part of this report will be applied. - Complete documentation will be maintained for VLD. - Valuation and compensation of affected assets of community should be in line with RPF/Sub-projects ARAPs and considered before the field activities. - Community consultations will be carried out before establishing the sites. - Decision Making through grass root consultation & proper document at each step to provide social acceptability and avoidance of elite capture.	All entitlement per ARAP	PIMU	PIMU/SDU	to be completed before start of construction	Before construction	Government funding based on the instrument prepared.
2.	Unsuitable toilet construction may lead to ground water contamination	Environment friendly designs of toilets and suitable for that specific area should be considered by the engineering design team at design stage.	Check the design details	Design Team SDU-TO & Consultant	PIMU/SDU	Check and inspect sustainability		Nil

⁵⁶ This proposed/generic standard table may be used as standard template of ESMP. Generic ESMP is also attached as Annexure R.

Sanitation Infrastructure Development Subprojects Category: Liquid Waste Management Improvement/Rehabilitation/Construction of Community Septic Tanks/Toilets								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		- Monitoring shall be made during project life cycle to check the sustainability of implemented interventions. - Pour flush is recommended with less water requirement for flushing				at design phase		
3.	Impacts on Women, Children, and Vulnerable Groups	- It will be ensured that the subprojects do not have any negative impacts on women, children and vulnerable groups. In Chapter 7 Gender framework is given and it will be implemented throughout the project, moreover stakeholder consultation framework is given in chapter 5 will implement to mitigate the impacts at each step - For community toilets, ramps for people in disabilities should be provided	Check the design details Discuss during public consultation at screening phase and monitoring pahse	Design Team SDU-TO & Consultant	PIMU	Ensure at design stage	Before and during constrcution	Nil
4.	Air Quality deterioration due to dust emissions and excavation activities	- Tractor loads should be covered with any suitable material. - Construction sites including soil piles should be fenced to avoid material escape, generation of dust and access to children	Inspect truck/tractor mobility, visual inpsctions	Contractor	PIMU	During construction of toilets	During construction of toilets	Nil
		Soil and temporary soil piles should be covered or sprayed with water if generating dust.	Inspect construction site	Contractor	PIMU	During construction of toilets	During construction of toilets	Nil

Sanitation Infrastructure Development Subprojects Category: Liquid Waste Management Improvement/Rehabilitation/Construction of Community Septic Tanks/Toilets								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		Construction sites including soil piles should be fenced to avoid material escape, generation of dust and access to children.	Inspect fencing	Contractor	PIMU	During construction of toilets	During construction of toilets	ESMP implementation cost
5.	Surface and Ground Water Quality deterioration due to runoff from toilets during operation or from labor camps of construction sites during construction	It will be ensured that the liquid wastes and toilets effluents are not released into any drinking water source, cultivation fields, or critical habitat.	Inspect discharge points of toilets	Contractor	PIMU	During operation of toilets	During operation of toilets	Nil
		- Effluents from the labor camps should not be released to drinking water sources, cultivation fields, irrigation channels, and critical habitats. - Appropriate effluent treatment arrangements such as settling tanks should be made at the site.	Inspect construction site	Contractor	PIMU	During construction of toilets	During construction of toilets	Nil
6.	Solid Waste Management for toilets during construction and operation	Construction sites should be equipped with temporary refuse bins.	Inspect placement of refuse bins	Contractor	PIMU	During construction of toilets	During construction of toilets	An estimated budget for ESMF implementation is given at the end of this Chapter
		Disposal of solid waste will be carried out in a manner that does not negatively affect the drinking water sources, cultivation fields, irrigation channels, natural drainage paths, and the existing waste management system in the	Inspect waste disposal	Contractor	PIMU	During construction of toilets	During construction of toilets	Nil

Sanitation Infrastructure Development								
Subprojects Category: Liquid Waste Management								
Improvement/Rehabilitation/Construction of Community Septic Tanks/Toilets								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		area, local routes, and general aesthetic value of the area.						
		Wastes should be routinely collected from the designated area and disposed at waste disposal facilities.	Inspect waste disposal	Contractor	PIMU	During construction of toilets	During construction of toilets	Nil
7.	Possible Noise emissions from running of construction machinery during construction	Machinery operation and high noise activities should be carefully planned and scheduled and in case of construction of toilets in community parks, it should be avoided during public gathering hours	Inspect construction activities near communities	Contractor	PIMU	During construction of toilets	During construction of toilets	Nil
		Where that is not possible, high noise activities should cease between 22:00 and 06:00 hrs.	Inspect working hours	Contractor	PIMU	During construction of toilets	During construction of toilets	Nil
8.	Pit/septic tank Sludge Management	- Composting of biodegradable waste will be considered and adopted. - Sludge after emptying the tanks/pits should be properly disposed at proper location and left for degradation. - Sludge will not be disposed of into open land	Check and Inspect sustainability	SDU-TO & Consultant	PIMU	During the course of project	During the course of project	
9.	Occupational Health and Safety	In the current scenario of COVID-19, GoPunjab Primary and Secondary Healthcare Department has issued Health Safety SOPs for construction workers for COVID-19 and they will be used during pandemic situation	Monitor SOPs compliance and WB EHS Guidelines provisions	SDU-TO & Consultant	PIMU	During construction of toilets	During construction of toilets	Nil

Sanitation Infrastructure Development Subprojects Category: Liquid Waste Management Improvement/Rehabilitation/Construction of Community Septic Tanks/Toilets								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		The construction contracts will include appropriate clauses to protect environment and public health. The present ESMF will be included in the bidding document.	Inspect bidding documents	SDU-TO & Consultant	PIMU	During construction of toilets	During construction of toilets	Nil
		Avoid stagnation of water and initiate drainage/cleanup of stagnant water.	Inspect construction site	SDU-TO & Consultant	PIMU	During construction of toilets	During construction of toilets	Nil
		Provide for the provision of appropriately stocked first-aid equipment at work sites.	Inspect first aid provision	SDU-TO & Consultant	PIMU	During construction of toilets	During construction of toilets	An estimated budget for ESMF implementation is given at the end of this Chapter
		Provide for the provision of appropriate Personal Protective Equipment (PPEs) to minimize risks, such as but not limited to appropriate outerwear, boots and gloves; safety helmets;	Inspect PPEs provision	SDU-TO & Consultant	PIMU	During construction of toilets	During construction of toilets	An estimated budget for ESMF implementation is given at the end of this Chapter
		Provide training to the workers for the use of PPEs	Check training records	SDU-TO & Consultant	PIMU	During construction of toilets	During construction of toilets	An estimated budget for ESMF implementation

Sanitation Infrastructure Development								
Subprojects Category: Liquid Waste Management								
Improvement/Rehabilitation/Construction of Community Septic Tanks/Toilets								
Sr.#	Anticipated Social /Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementatation of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		Include procedures for documenting and reporting accidents, diseases, and incidents.	Check procedures	SDU-TO & Consultant	PIMU	During construction of toilets	During construction of toilets	Nil
10.	Labor influx related issues also including SEA/SH and management of COVID-19 during construction ⁵⁷ .	Labor management plan prepare and implemented as a part of the ESMP ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects-WorldBank Guidelines & Health & Safety SOPs for construction Workers/Sector for COVID-19 is attached as Annexure U.	CONSULTANT/SDU	Contractor	PIMU	During construction	During construction	An estimated budget for ESMF implementation
11	Child labor & minimum wages	Standard clause in the contracts related to child labor explicit prohibitions, etc) and contractor will ensure compliance to the contractual provisions on bonded and child labor, equal wages for similar work explicit prohibitions, etc)	- Site Observation to ensure that no child is working at site as labor - ID Checking	Contractor	PIMU/SDU	During construction	During construction	

⁵⁷ ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects-WorldBank Guidelines & Health & Safety SOPs for construction Workers/Sector for COVID-19

Table 21 ESMMF Liquid Waste Management⁵⁸

Sanitation Infrastructure Development Sub-Projects Category: Liquid Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitori ng	
1.	Land acquisition and resettlement Elite Capture Social Acceptability	- The subprojects will be established on the land owned by community or Government land .Community land will be acquired through VLD procedure. If VLD will not be possible, the RPF as part of this report will be applied. - Complete documentation will be maintained for VLD. - Valuation and compensation of affected assets of community should be in line with RPF/Sub-projects ARAP and considered before the field activities. - Community consultations will be carried out before establishing the sites. - Decision Making Through grass root consultation & proper documentation at each step to provide social acceptability.	All entitlement per ARAP	PIMU	PIMU	to be completed before start of construction	Before Constrcution	Government funding based on the instrument prepared.

⁵⁸ This proposed/generic standard table may be used as standard template of ESMP. Generic ESMP is also attached as Annexure R.

Sanitation Infrastructure Development Sub-Projects Category: Liquid Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitori ng	
2.	Air pollution and odour-construction and operation of the sludge pond may increase levels of exhaust and suspended particulate	- The use of a digesting treatment before disposal can considerably lessen these odors. - However, there is no natural or artificial structure to prevent this diffusion, and the effect may be alleviated to some extent by careful alignment. - Exhaust and suspended particulate may be lessened if methane gas is recovered from the sludge and used for energy generation	Visual inspection	SDU/Consultant Design team	PIMU	During and after construction	Before Constrcution	To be determined in final design – included in cost estimates
3.	Surface/GW contamination	- Construction of the sludge ponds/treatment plant will considerably improve the quality of the wastewater discharged to agricultural fields. - Degradation of GW quality if leakage may occur which should be considered in engineering design to control leakage - GW levels may increase and cause water logging if constructed in shallow regions.	Carefully consider at design and screening stage	Design Engineers and SDU/Consultant	PIMU	At planning/ design stage and at operational phase after construction	At planning/ design stage and at operation al phase after construct ion	To be determined in final design

Sanitation Infrastructure Development Sub-Projects Category: Liquid Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitori ng	
		Therefore, it should be considered during design/planning phase						
4.	Overflow can cause flooding/damage to nearby properties/crops	In case of mixing of storm water into the wastewater collecting system, the water loads will be increased which should be adjusted in the design capacity at planning/design stage	Pre-construction-at design phase	Design Engineers and SDU/Consultant	PIMU	At planning/design stage	At planning/design stage	To be determined in final design
5.	Odour, aesthetic nuisance The operation of the sludge pond and the transportation of sludge to its final disposal site can affect the vicinity with offensive odour	- Design to secondary treatment - Use of infiltration gallery for effluent disposal - Buffer zones - Simple O&M	Inspect site before and during execution	Design team, SDU/Consultant	PIMU	During course of project	During course of project	To be determined in final design
6.	Air pollution due to dust from	- Water sprinkling - Minimizing on-site material storage	Inspect sub-project site during construction	Contractor and	PIMU	During course of project	During course of project	Nil

Sanitation Infrastructure Development Sub-Projects Category: Liquid Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitori ng	
	exposed surface, from construction equipment and vehicles	- Cover material during transportation. - Use of face mask while working on dust prone areas - Awareness and capacity building for use of appropriate Personal Protective Equipment (PPEs) will be mandatory.		SDU/Consultant				
7.	Noise pollution during construction works, material hauling and unloading	- Avoid construction activities during school hours - Restricted use of horn near school and settlements - Careful construction scheduling - Site sound barriers - Proper O&M of equipment	Inspect site areas during construction activities	SDU/Consultant	PIMU	During course of project	During course of project	Inherent to construction contract costs
8.	Solid waste generation storage deposits, excavation debris and solid waste, and waste water	- Location of camp site away from settlements - Proper storage and disposal of chemical and materials in the area designated by TCs. - May use local labor and local houses as camp area	Inspect camp site	SDU/Consultant	PIMU	During course of project	During course of project	House rent/ compensation to be included in the subproject cost.

Sanitation Infrastructure Development Sub-Projects Category: Liquid Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitori ng	
	from camp site of labor may cause pollution	In case local house is to be used as camp office, pay rent as compensation to house/land owner						
9.	Air pollution due to emission of smoke, increase in vibration and noise pollution due to operation of construction equipment(s)	- All the vehicles deployed for material movement shall be spill proof to the extent possible. - Equipment/vehicles deployed for construction activities shall be monitored regularly	Inspect during construction activities	SDU-TO /Consultant	PIMU	During course of project	During course of project	Nil
10.	Impact on Community Infrastructure due to demolition of structures along alignment	- Restoration or relocation of affected infrastructures. - Information signboard will be placed (Such as School area, Speed limit, drive slowly)	Inspect community areas	Contractor	PIMU	During course of project	During course of project	Contractor will be responsible to restore the private infrastructure

Sanitation Infrastructure Development Sub-Projects Category: Liquid Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitori ng	
11.	Impacts on Women (privacy and <i>pardah</i> issues) Children (restricted movements) and overall restricted mobility	- It will be ensured that the subprojects do not have any negative impacts on women, children and vulnerable groups. In Chapter 7 Gender Framework is given and it will be implemented throughout the project. Moreover Stakeholder Consultation Framework is given in chapter 5 and will be implemented to mitigate the impacts (if any) - Labor will be trained not to interfere with the local community - Local community (especially women and children) will be informed before construction activities and entry of labor at site areas	Inspect during construction activities	Contractor	PIMU	During course of project	During course of project	Capacity building /training sessions with labor
12.	Occupational Health and Safety	In the current scenario of COVID-19, GoPunjab Primary and Secondary Healthcare Department has issued Health Safety SOPs for construction workers for COVID-19 and they will be used during pandemic situation	Audit WB EHS guidelines provisions	SDU-TO /Consultant	PIMU	During course of project	During course of project	Cost of First Aid Box= Rs. 1,000

Sanitation Infrastructure Development Sub-Projects Category: Liquid Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitori ng	
		The construction contracts will include appropriate clauses to protect environment and public health. The present ESMF will be included in the bidding document.	Inspect bidding documents	SDU-TO /Consultant Contractor	PIMU			PPE cost per worker= Rs. 6,000
		Avoid stagnation of water and initiate drainage/cleanup of stagnant water.	Inspect construction site	Contractor	PIMU			
		Provide for the provision of appropriately stocked first-aid equipment at work sites;	Inspect First aid provision	Contractor	PIMU			
		Provide for the provision of appropriate personal protective equipment (PPE) to minimize risks, such as but not limited to appropriate outerwear, boots and gloves; safety helmets	Inspect PPE provision	SDU/Consultant Contractor	PIMU			
13.	Odor /gaseous emissions during O/M	- Engineering controls - Buffer zones - Odor control - O&M capacity building	Community consultation	SDU/Consultant and contractor	PIMU	During O/M	During O/M	To be determined in final design – included in cost estimates
14.	Open structure of sludge pond may cause a source of	Public consultation and awareness	Community Awareness	SDU/Consultant contractor,	PIMU	During operation	During operation	Nil

Sanitation Infrastructure Development Sub-Projects Category: Liquid Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitori ng	
	falling danger for children	• Cardoon off the surrounding area and create a boundary line in the premises • Use of signage						
15.	Waste Sludge	• The waste water treatment will generate a considerable amount of waste in the form of sludge. This sludge must be disposed of carefully. • Nevertheless, depending on the quality of the sludge, it could be used as fertilizer.		SDU/Consul tant and TCs	PIMU	Post Operation phase	Post Operatio n phase	May be used for grain crops
16.	Involuntary Resettlement from the nearby surrounding areas after operation phase may occur due to odor nuisance or if the community land to be used for construction of	• During screening procedure, it will be ensured that there are no inhabitants /squatters at that piece of land • Negative post project impacts can also be minimized by planning the construction in preferably outside the populated area or an area with low population density in surroundings	At planning/ design and screening stage	SDU/Consul tant TCs	PIMU	At screening and project design	At screening and project design	Implementation of RPF if required

Sanitation Infrastructure Development Sub-Projects Category: Liquid Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicators	Responsibility		Frequency		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitori ng	
	sludge pond has squatters							
17.	Labor influx related issues also including SEA/SH and management of COVID-19 during construction. ⁵⁹	Labor management plan prepare and implemented as a part of the ESMP. ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects-WorldBank Guidelines & Health & Safety SOPs for construction Workers/Sector for COVID-19 is attached as Annexure U.	PIMU/Consultant	Contractor	PIMU	During construction	During construct ion	An estimated budget for ESMF implementation
18.	Child labor & minimum wages	Standard clause in the contracts related to child labor explicit prohibitions, etc) and contractor will ensure compliance to the contractual provisions on bonded and child labor, equal wages for similar work explicit prohibitions, etc)	- Site Observation - ID Checking	Contractor	PIMU/SDU	During construction	During construct ion	

⁵⁹ ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects-WorldBank Guidelines & Health & Safety SOPs for construction Workers/Sector for COVID-19

Table 22: ESMMF Rehabilitation of Water Supply Distribution Network⁶⁰

Water Supply Infrastructure Development Sub-Projects Category: Water Supply Rehabilitation of Water Supply Distribution Network								
Sr. #	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Schedule		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitoring	
1.	Land acquisition and resettlement Elite Capture Social Acceptability	- The subprojects will be established on the land owned by community or Government land .Community land will be acquired through VLD procedure. If VLD will not be possible, the RPF as part of this report will be applied. - Complete documentation will be maintained for VLD. - Valuation and compensation of affected assets of community should be in line with	All entitlement per ARAP	PIMU	PIMU	to be completed before start of constructio n	Before constrcution	Government funding based on the instrument prepared.

⁶⁰ This proposed/generic standard table may be used as standard template of ESMP. Generic ESMP is also attached as Annexure R.

Water Supply Infrastructure Development Sub-Projects Category: Water Supply Rehabilitation of Water Supply Distribution Network								
Sr. #	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Schedule		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		RPF/Sub-projects ARAPs and considered before the field activities. - Community consultations will be carried out before establishing the sites. - Decision making through grass root consultation & proper documentation at each step will be ensured to make sub projects socially acceptable and for avoidance of social conflicts.						
2.	Temporary disturbances in water supply due to maintenance activities	- Timely Public Consultation - Water users of that area will be informed timely about the temporary interruptions in water supply - If water supply has to discontinue for more than 24 hours then alternate arrangements of safe water supply should be made	During subproject activities	SDU-TO & Consultant	PIMU	During the course of project	During the course of project	TCs will have alternate arrangements of water supply tanks
3.	Air pollution due to dust from exposed surface, from	- Water sprinkling - Minimizing on-site material storage - Cover material during transportation.	Inspect subproject site during construction	Contractor	PIMU	During course of project	During course of project	Nil

Water Supply Infrastructure Development Sub-Projects Category: Water Supply Rehabilitation of Water Supply Distribution Network								
Sr. #	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Schedule		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitoring	
	construction equipment and vehicles	• Use of face mask while working on dust prone areas • Awareness and capacity building for use of appropriate Personal Protective Equipment (PPEs) will be mandatory.						
4.	Noise pollution during construction works, Material hauling and unloading	• Avoid construction activities during school/hospital hours • Restricted use of horn near school and settlements • Careful construction scheduling • Site sound barriers • Proper O&M of equipment	Inspect site areas during construction activities	Contractor	PIMU	During course of project	During course of project	Inherent to construction contract costs
5.	Solid waste generation storage deposits, excavation debris and solid waste, and waste water from camp site of labor	• Location of camp site away from settlements • Proper storage and disposal of chemical and materials in the area designated by Village panchyats and TCs. • May use local labor and local houses as camp area	Inspect camp site	SDU-TO and contractor	PIMU	During course of project	During course of project	

Water Supply Infrastructure Development Sub-Projects Category: Water Supply Rehabilitation of Water Supply Distribution Network								
Sr. #	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Schedule		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitoring	
	may cause pollution	In case local house is to be used as camp office, pay rent as compensation to house/land owner						
6.	Air pollution due to emission of smoke, increase in vibration and noise pollution due to operation of construction equipment's	- All the vehicles deployed for material movement shall be spill proof to the extent possible. - Equipment/Vehicles deployed for construction activities shall be monitored regularly	Inspect during construction activities	Contractor	PIMU	During course of project	During course of project	Nil
7.	Impact on Community Infrastructure due to demolition of structures along alignment	- Restoration or relocation of affected infrastructures. - Information signboard will be placed (such as School area, Speed limit, drive slowly) - Relocation and Restoration costs	Inspect community areas	Contractor	PIMU	During course of project	During course of project	Contractor will be responsible to restore the private infrastructure or

Water Supply Infrastructure Development Sub-Projects Category: Water Supply Rehabilitation of Water Supply Distribution Network								
Sr. #	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Schedule		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitoring	
								compensate as per Entitlement Matrix
8.	Impacts on Women (privacy and <i>pardah</i> issues) Children (restricted movements) and overall restricted mobility	- It will be ensured that the subprojects do not have any negative impacts on women, children and vulnerable groups. In Chapter 7 Gender framework is given and it will be implemented throughout the project. Moreover stakeholder consultation framework is given in chapter 5 and will be implemented to mitigate the impacts (if any) - Labor will be trained not to interfere with the local community - Local community (especially women and children) will be informed before construction activities and entry of labor at site areas	Inspect during construction activities	Contractor	PIMU	During course of project	During course of project	Capacity building /training sessions with labor

Water Supply Infrastructure Development Sub-Projects Category: Water Supply Rehabilitation of Water Supply Distribution Network								
Sr. #	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Schedule		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitoring	
9.	Occupational Health and Safety	In the current scenario of COVID-19, GoPunjab Primary and Secondary Healthcare Department has issued Health Safety SOPs for construction workers for COVID-19 and they will be used during pandemic situation	Audit WB EHS guidelines provisions	Contractor	PIMU	During course of project	During course of project	An estimated budget for ESMF implementation
		The construction contracts will include appropriate clauses to protect environment and public health. The present ESMF will be included in the bidding document.	Inspect bidding documents	SDU-TO & Consultant Contractor	PIMU			
		Avoid stagnation of water and initiate drainage/cleanup of stagnant water.	Inspect construction site	Contractor SDU & Consultant	PIMU			
		Provide for the provision of appropriately stocked first-aid equipment at work sites;	Inspect First aid provision	SDU-TO & Consultant Contractor	PIMU			
		Provide for the provision of appropriate personal protective equipment (PPEs) to minimize risks, such as but not limited to	Inspect PPEs provision	SDU-TO & Consultant Contractor	PIMU			

Water Supply Infrastructure Development Sub-Projects Category: Water Supply Rehabilitation of Water Supply Distribution Network								
Sr. #	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Schedule		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitoring	
		appropriate outerwear, boots and gloves; safety helmets						
10.	Damage to drinking water supply line /deterioration of water quality due to mixing of waste water	• Engineering controls • Consultation with communities to know the status of drinking water supply schemes • Public consultation before time and supplementary arrangements if water supply has to be stopped for certain time period • Water quality analysis before during and after construction activities	Community consultation	SDU-TO & Consultant	PIMU	During operation	During operation	Water quality analysis will be carried out in Punjab EPA Certified labs
11.	Excavated areas / may cause a nuisance for children	• Public consultation and awareness regarding project activities • Cardoon off the exceed area and manholes • Use of signage	Site inspections	SDU-TO & Consultant contractor	PIMU	During operation	During operation	Nil
12.	Labor influx also including SEA/SH and management of	• Labor management plan prepare and implemented as a part of the ESMP. ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects-WorldBank Guidelines & Health &	Site inspections	Contractor	PIMU	During constructio n	During construction	An estimated budget for ESMF

Water Supply Infrastructure Development Sub-Projects Category: Water Supply Rehabilitation of Water Supply Distribution Network								
Sr. #	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Schedule		Cost and Source of Funds
				Implementati on of mitigation measures	Monitoring	Mitigation measures	Monitoring	
	COVID-19 during construction. ⁶¹	Safety SOPs for construction Workers/Sector for COVID-19 is attached as Annexure U .						implementati on
13.	Child labor & minimum wages	Standard clause in the contracts related to child labor explicit prohibitions, etc) and contractor will ensure compliance to the contractual provisions on bonded and child labor, equal wages for similar work explicit prohibitions, etc)	- Site Observation - ID Checking	Contractor	PIMU/SDU	During construction	During construction	

⁶¹ ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects-WorldBank Guidelines & Health & Safety SOPs for construction Workers/Sector for COVID-19

Table 23: ESMMF Waste Management⁶²

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
1.	Land acquisition and resettlement Elite Capture Social Acceptability	- The subprojects will be established on the land owned by community or Government land .Community land will be acquired through VLD procedure. If VLD will not be possible, the RPF as part of this report will be applied. - Complete documentation will be maintained for VLD. - Valuation and compensation of affected assets of community should be in line with RPF/Sub-projects ARAPs and considered before the field activities. - Community consultations will be carried out before establishing the sites. - Decision Making through grass root consultation & proper	All entitlement per ARAP	PIMU	PIMU	to be completed before start of constructio n	Before constrcutio n	Government funding based on the instrument prepared.

⁶² This proposed/generic standard table may be used as standard template of ESMP. Generic ESMP is also attached as Annexure R.

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
		documentation at each step will be ensured to make sub-projects socially acceptable and to avoid social conflicts.						
2.	Soil and Water Contamination	- The dumpers and waste vehicles shall be covered properly; no waste should scattered out from the vehicles. The floor of the facility shall have thick cover to separate waste from the soil - Strict Measures would be taken and restrict workers not to wash hauling vehicles near the canal as it will pollute the surface water source which is used by the animals of the nearby communities and for agriculture purpose. - The sewage water shall not discharge into the canal. Similarly, rain water shall be contained in pit and after treatment shall be used for sprinkling onto the roads, and irrigation purposes. Septic tanks are proposed for initial treatment of sewage then the treated water will be used for irrigation	Site Inspection	SDU/Consultant Design team	PIMU	During operation	During operation	

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
		purposes. Moreover, in order to avoid dispose off in canal, waste water treatment plant is proposed for effective treatment. • Dust retention plants will be planted to overcome the dust issues and increase scenic beauty of the site. • Cut-off drains and peripheral drains around the site should be provided by keeping in view of the flow of ground water on both upstream and downstream of the disposal site. Moreover, geo-membranes can also be used to reduce infiltration and percolation.						
3.	Air emissions from vehicles and odor problems due to solid waste at the site	• It is recommended to use well-tuned vehicles and quality lubricants must be used. All waste transportation vehicles shall be regularly maintained to ensure that pollution levels are in conformity to the PEQs defined by the EPA. • Odor can be controlled by following measures: • Layering daily soil cover on regular basis in order to prevent odors and	Site Inspection	SDU/Consultant Design team	PIMU	During and after construction	Before & during Construction	To be determined in final design – included in cost estimates

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
		vector problems. Also, odor filter (bio-filters) shall be installed at the facility to absorb the bad smell. In addition to that, proper design and operation of gas management system shall be recommended. • The indigenous and fancy plants shall be planted alongside the waste processing facility and in the surrounding to reduce the odor and increase its aesthetic value. • Windrows at the site are also proposed in order to reduce the level of odor.						
4.	Visual and Aesthetic Impacts	• The boundary walls shall be constructed alongside the facility to avoid eye soaring impacts. • The waste transfer vehicles shall be properly covered. • The indigenous and fancy plants shall be planted alongside the waste processing facility to reduce the odor and increase its aesthetic value.	Site Inspection	SDU/Consultant Design team	PIMU	During operational	During operational	Included in EMP cost

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
5.	Leachate generation from solid waste at the site	• Designs standards for Leachate control system as per requirements shall be reviewed prior to the construction of facility. Runoff away from the site will be helpful to limit leachate generation and reduces infiltration. Moreover, Leachate collection pond will be constructed generated from solid waste windrows that will be further recirculated and utilized for composting purposes. • Waste should be properly covered at the site and maximum effort shall bring in to practice to avoid contact with precipitation. • Vegetative cover around also plays significant role in leachate production control by limiting infiltration and reduce percolation.	Site Inspection	SDU/Consultant Design team	PIMU	During operational	During operational	
6.	Surface/GW contamination	• Construction of the sludge ponds/treatment plant will considerably improve the quality of the wastewater discharged to agricultural fields.	Carefully consider at design and screening stage	Design Engineers and	PIMU	At planning/ design stage and	At planning/ design stage and	To be determined in final design

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
		- Degradation of GW quality if leakage may occur which should be considered in engineering design to control leakage - GW levels may increase and cause water logging if constructed in shallow regions. Therefore, it should be considered during design/planning phase		SDU/Consultant		at operational phase after construction	at operational phase after construction	
7.	Overflow can cause flooding/damage to nearby properties/crops	In case of mixing of storm water into the wastewater collecting system, the water loads will be increased which should be adjusted in the design capacity at planning/design stage	Pre-construction-at design phase	Design Engineers and SDU/Consultant	PIMU	At planning/design stage	At planning/design stage	To be determined in final design
8.	Odour, aesthetic nuisance The operation of the sludge pond and the transportation of sludge to its final disposal site can affect the vicinity with offensive odour	- Design to secondary treatment - Use of infiltration gallery for effluent disposal - Buffer zones - Simple O&M	Inspect site before and during execution	Design team, SDU/Consultant	PIMU	During course of project	During course of project	To be determined in final design

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
9.	Air pollution due to dust from exposed surface, from construction equipment and vehicles	• Water sprinkling • Minimizing on-site material storage • Cover material during transportation. • Use of face mask while working on dust prone areas • Awareness and capacity building for use of appropriate Personal Protective Equipment (PPEs) will be mandatory.	Inspect sub-project site during construction	Contractor and SDU/Consultant	PIMU	During course of project	During course of project	Nil
10.	Noise pollution during construction works, material hauling and unloading	• Avoid construction activities during school hours • Restricted use of horn near school and settlements • Careful construction scheduling • Site sound barriers • Proper O&M of equipment	Inspect site areas during construction activities	SDU/Consultant	PIMU	During course of project	During course of project	Inherent to construction contract costs
11.	Solid waste generation storage deposits, excavation debris and solid	• Location of camp site away from settlements	Inspect camp site	SDU/Consultant	PIMU	During course of project	During course of project	House rent/ compensation to be included in the subproject cost.

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
	waste, and waste water from camp site of labor may cause pollution	• Proper storage and disposal of chemical and materials in the area designated by TCs. • May use local labor and local houses as camp area • In case local house is to be used as camp office, pay rent as compensation to house/land owner						
12.	Air pollution due to emission of smoke, increase in vibration and noise pollution due to operation of construction equipment(s)	• All the vehicles deployed for material movement shall be spill proof to the extent possible. • Equipment/vehicles deployed for construction activities shall be monitored regularly	Inspect during construction activities	SDU/Consultant	PIMU	During course of project	During course of project	Nil
13.	Impact on Community Infrastructure due to demolition of	• Restoration or relocation of affected infrastructures.	Inspect community areas	Contractor	PIMU	During course of project	During course of project	Contractor will be responsible to restore the private infrastructure

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
	structures along alignment	Information signboard will be placed (Such as School area, Speed limit, drive slowly)						
14.	Impacts on Women (privacy and <i>pardah</i> issues) Children (restricted movements) and overall restricted mobility	- It will be ensured that the subprojects do not have any negative impacts on women, children and vulnerable groups. In Chapter 7 Gender Framework is given and it will be implemented throughout the project. Moreover stakeholder consultation framework is given in chapter 5 and will be implemented to mitigate the impacts (if may found any) - Labor will be trained not to interfere with the local community - Local community (especially women and children) will be informed before construction activities and entry of labor at site areas	Inspect during construction activities	Contractor	PIMU	During course of project	During course of project	Capacity building /training sessions with labor

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
15.	Occupational Health and Safety	In the current scenario of COVID-19, GoPunjab Primary and Secondary Healthcare Department has issued Health Safety SOPs for construction workers for COVID-19 and they will be used during pandemic situation	Audit WB EHS guidelines provisions	SDU/Consultant SDU/Consultant Contractor	PIMU	During course of project	During course of project	
		The construction contracts will include appropriate clauses to protect environment and public health. The present ESMF will be included in the bidding document.	Inspect bidding documents					
		Avoid stagnation of water and initiate drainage/cleanup of stagnant water.	Inspect construction site	Contractor				
		Provide for the provision of appropriately stocked first-aid equipment at work sites;	Inspect First aid provision	Contractor	PIMU			
		Provide for the provision of appropriate personal protective equipment (PPE) to minimize risks, such as but not limited to appropriate	Inspect PPE provision	SDU/Consultant Contractor	PIMU			

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
		outerwear, boots and gloves; safety helmets						
16.	Odor /gaseous emissions during O/M	- Engineering controls - Buffer zones - Odor control - O&M capacity building	Community consultation	SDU/Consultant and contractor	PIMU	During O/M	During O/M	To be determined in final design – included in cost estimates
17.	Open structure of sludge pond may cause a source of falling danger for children	- Public consultation and awareness - Cardoon off the surrounding area and create a boundary line in the premises - Use of signage	Community Awareness	SDU/Consultant contractor,	PIMU	During operation	During operation	Nil
18.	Waste Sludge	- The waste water treatment will generate a considerable amount of waste in the form of sludge. This sludge must be disposed of carefully. - Nevertheless, depending on the quality of the sludge, it could be used as fertilizer.		SDU/Consultant and TCs	PIMU	Post Operation phase	Post Operation phase	May be used for grain crops
19.	Involuntary Resettlement from the nearby	During screening procedure, it will be ensured that there are no	At planning/	SDU/Consultant TCs	PIMU	At screening	Before construction	Implementation of RPF if required

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
	surrounding areas after operation phase may occur due to odor nuisance or if the community land to be used for construction of sludge pond has squatters	inhabitants /squatters at that piece of land Negative post project impacts can also be minimized by planning the construction in preferably outside the populated area or an area with low population density in surroundings	design and screening stage			and project design		
20.	Labor influx related issues also including SEA/SH and management of COVID-19 during construction. ⁶³	Labor management plan prepare and implemented as a part of the ESMP. ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects-WorldBank Guidelines & Health & Safety SOPs for construction Workers/Sector for COVID-19 is attached as Annexure U .	PIMU/Consultant	Contractor	PIMU	During construction	During construction	An estimated budget for ESMF implementation

⁶³ ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects-WorldBank Guidelines & Health & Safety SOPs for construction Workers/Sector for COVID-19

Plastic, Animal and Solid Waste Management Sub-Projects Category: Waste Management								
Sr.#	Anticipated Social/ Environmental Impacts	Mitigation Measure(s)	Monitoring Indicator	Responsibility		Frequency		Cost and Source of Funds
				Implementatio n of mitigation measures	Monitorin g	Mitigation measures	Monitorin g	
21.	Child labor & minimum wages	Standard clause in the contracts related to child labor explicit prohibitions, etc) and contractor will ensure compliance to the contractual provisions on bonded and child labor, equal wages for similar work explicit prohibitions, etc)	- Site Observation and ensure that no child is working on site as a labor. - ID Checking	Contractor	PIMU/SD U	During constructio n	During constructio n	

7.5. Environmental & Social Mitigation and Monitoring Plan for ESMF

The generic mitigation plan prepared on the basis of impact assessment discussed in the previous section is presented in following table. The subproject-specific mitigation plans will be implemented in combination with the generic mitigation plan. These mitigation plans will be expanded if needed and finalized once the subproject location is known. These plans will also be included in the subproject ESMPs. The relevant mitigation plans and also the site-specific ESMP will be included in the design of each subproject, and included in the bidding documents of contractors.

Table 24: ESMF Mitigation and Monitoring Plan

Sr.#	Environmental/ Social Impact / Issue	Potential Significance	Location	Mitigation Actions	Frequency of Intervention	Responsibility	
						Implementat ion	Monitoring
	Subproject siting to any sensitive area Elite Capture Social Acceptability	Medium	At sub- projects location	- It will be ensured through screening checklist that the subproject avoids any ecologically sensitive areas, PCRs and arrears having any critical habitats. - Involuntary Resettlement Screening Checklist is presented in to be used to check the status of land belong to be executed for sub-projects. - It will be ensured that private or government land and free from any disputes and APs are duly compensated as per the Entitlement Matrix. - All the relevant stakeholders will be taken onboard for the identification construction sites of sub-projects. - Complete documentation will be maintained as per RPF and VLD - Valuation and compensation of affected assets of community should be in line with RPF/Subprojects ARAPs and considered before the field activities. - Community consultations will be carried out before establishing the sites. - Decision making through grass root consultation & proper documentation will be ensured at each step to avoid social conflicts	Before the start of each subproject	PIMU& SDU-TO	PIMU
2.	Air Quality deterioration due to dust emissions,	Low	Construction sites of subprojects	Construction machinery, generators, and vehicles will be kept in good working condition, minimizing exhaust emissions.	During Construction	Contractor	PIMU

Sr.#	Environmental/ Social Impact / Issue	Potential Significance	Location	Mitigation Actions	Frequency of Intervention	Responsibility	
						Implementat ion	Monitoring
	odor and aesthetics nuisance			- Truck/tractor loads should be covered with suitable material. - Soil and temporary spoil piles should be covered - Water sprinkling will be ensured to avoid generating dust. - Construction sites including soil piles in streets and open spaces should be barricaded to avoid material escape, generation of dust and access to children.			
3.	Water Consumption and Conservation	Low	At labor camps and during construction activities	Capacity building of workers	During labor training sessions	Contractor	SDU-TO and PIMU
4.	Surface and Ground Water Quality deterioration	Low	Construction site	- Design characteristics in case of construction of sludge ponds and rehabilitation of drainage system water distribution networks will be considered to avoid leakages - GW levels and existing quality of GW will be considered at screening stage. - It will be ensured that the wastes are not released into any drinking water source, irrigation channels, cultivation fields, or critical habitat. - Effluents from the construction sites will not be released to drinking water sources, cultivation fields, irrigation channels, and critical habitats. Appropriate	At planning/ design stage and during construction	SDU-TO	PIMU

Sr.#	Environmental/ Social Impact / Issue	Potential Significance	Location	Mitigation Actions	Frequency of Intervention	Responsibility	
						Implementat ion	Monitoring
				effluent treatment arrangements such as settling tanks will be made at the site. Sludge collected from existing sewerage/drainage systems will be collected in a safely manner and may be used as fertilizer.			
5.	Solid Waste Management	Low	Construction site and labor camp	- For recycling of solid waste and minimization, it should be local waste dealers as far as possible and practical. - Disposal of solid waste will be carried out in a manner that does not negatively affect the drinking water sources, cultivation fields, irrigation channels, natural drainage paths, and the existing waste management system in the area, local routes, and general aesthetic value of the area. - Construction sites should be equipped with temporary refuse bins. - Wastes should be routinely collected from the designated area and disposed at waste disposal facilities.	During and after construction activities	Contractor, SDU-TO	PIMU
6.	Noise	Low	Construction sites	- Machinery operation and high noise activities should be carefully planned and scheduled. - Where that is not possible, high noise activities should cease between 22:00 and 06:00 hrs.	During machinery operations	Contractor	PIMU, SDU-TO

Sr.#	Environmental/ Social Impact / Issue	Potential Significance	Location	Mitigation Actions	Frequency of Intervention	Responsibility	
						Implementat ion	Monitoring
7.	Occupational Health and Safety	Low	Construction sites	• The construction contracts will include appropriate clauses to protect environment and public health. The present ESMF compliance in form of relevant ESMP and SMP of sub-project will be included in the bidding document. • Avoid stagnation of water and initiate drainage/cleanup of stagnant water. • Provide for the provision of appropriately stocked first-aid equipment at work sites; • Provide for the provision of appropriate personal protective equipment (PPE) to minimize risks, such as but not limited to appropriate outerwear, boots and gloves; safety helmets; • Provide training for workers for the use of PPE; • WB Group's Environment, Health and Safety (EHS) Guidelines and GoPunjab SOPs in emergency will be implemented; • Include procedures for documenting and reporting accidents, diseases, and incidents.	Construction phase	Contractor	PIMU, SDU-TO
8.	Labor related issues also including SEA/SH	Low	Construction site	• Preference will be given to labor from locally skilled and unskilled workers of community for the construction of toilets in schools. • TCs will ensure that certain clauses will be added in the contract documents i.e. not to force labor to work and official minimum wages to be paid.	Construction phase	Contractor	PIMU, SDU-TO

Sr.#	Environmental/ Social Impact / Issue	Potential Significance	Location	Mitigation Actions	Frequency of Intervention	Responsibility	
						Implementat ion	Monitoring
				• Consultation with labor • Labor management plan will be prepared as a part of ESMP.			
9.	Child labor & minimum wages	Medium	Construction site	• Personal observation and ensure that no child is working on site as a labor • ID Checking	Construction phase	Contractor	PIMU, SDU-TO

7.6. Monitoring Framework

ESMF monitoring will be integrated with the overall project monitoring components and it may be elaborated as under:

7.6.1. Internal Monitoring

ESMF monitoring will be carried out to ensure that the ESMPs are regularly and effectively implemented. It will be carried out at three levels. At PIMU level, Tehsil level (SDU) and at field level (subprojects executing sites).

At the PIMU level- ESS & SSS- PIMU will carry out ESMF monitoring to ensure that the mitigation plans of relevant instruments are being effectively implemented, and will conduct field visits on a regular basis.

At Tehsil level- SDU-TOs will be responsible for ESMF compliance through monitoring and evaluation at field level. It will ensure that the environmental and social management during execution of subproject is in line with the ESMPs and subproject specific migration measures are in place.

Field Level- Panchayat/VCs will also conduct consultation with communities especially with women and other vulnerable groups.

Table 25: Monitoring Levels and Responsibility

Level	Responsibility	Monitoring Tasks
Internal Monitoring		
PIMU Level	PIMU	ESMF monitoring to ensure that the mitigation and management plans provided in ESMP are being effectively implemented, and will conduct field visits on a regular basis
Tehsil Level	SDU-TO	ESMF implementation monitoring and evaluation at Field office and respective Tehsils Maintain the records / documents of monitoring reports/checklists Consultation with communities, labor and vulnerable groups
Field Level	Panchayat/Village Councils	Field level environmental and social aspects with the technical insight from PIMU& SDU-TO.

7.6.2. External Monitoring/Third Party Monitoring (TPM)

LG&CDD will engage an independent Third Party Monitoring firm to verify Project. TPV will be 3 times during the life of the project. The assessment results will be shared simultaneously with the World Bank and GoPunjab to ensure transparency.

- Review ESMF and propose amendments/changes- if required;

- Review implementation procedures are in compliance with the procedures/steps prescribed in ESMF;
- Review the implementation status of mitigation measures in the ESMF, sums, and Screening Checklists, and the related documentation;
- Review the environmental and social monitoring regime as specified in the ESMF and sums;
- Review reports of monitoring carried out by SSS/ES identify non-compliances/gaps, and recommend changes, to improve monitoring mechanisms, if any.
- Carry out the field visits of sample sub-projects during/after construction for spot checks and monitoring
- Conduct stakeholders consultations particularly with community to validate their participation, feedback/comments and level of awareness regarding ongoing interventions of PRSWSSP in their area

This will include providing feedback to improve integration of ESMF in the overall project implementation.

Below table presents the measures/activities to be monitored internally and externally during Project lifecycle:

Table 26: ESMF Monitoring Framework

S#	Measures/Activities to be monitored	Monitoring						
		PIMU Level	Frequency	Tehsil Level	Frequency	Field (Village) Level	Frequency	Frequency
Anticipated Subprojects								
1.	Sub-projects siting to any sensitive area (environmentally or culturally) Subprojects siting Land Acquisition procedures and Entitlement Framework and compensation of affected assets in line with RPF/Sub-projects ARAPs.	ESS &SSS (under the supervision of PD-PRSWSSP) will ensure the site visit of every city for screening and public consultation for at least 1 category of subprojects	At least once before siting of subprojects	SDU-TO	At least once before siting of each subproject	VCs	Before, during and after siting of each subproject	Annually (at the time of subprojects execution)
2.	Air Quality deterioration due to dust emissions Condition of construction machinery, generators, and vehicles in terms of exhaust emissions. Covering and spraying of soil and temporary spoil piles. Access community disruption.	ESS &SSS (under the supervision of PD-PRSWSSP) will ensure the site visit of every city for screening and public consultation	Before, during, and after for a sample of subprojects	SDU-TO	Before, during, and after execution of subprojects	VCs	Before, during, and after execution of subprojects	Annually (at the time of sub-projects execution)
3.	Surface and Ground Water Quality deterioration	Documentation verifications –	Before, during and after	SDU-TO	Weekly before, during	VCs	Before, during, and after	Annually

S#	Measures/Activities to be monitored	Monitoring						
		PIMU Level	Frequency	Tehsil Level	Frequency	Field (Village) Level	Frequency	Frequency
	Wastewater disposal.	Drinking water Quality (Laboratory Reports etc). Ground water levels	Subprojects execution		and after subprojects execution		execution of subprojects	(at the time of subprojects execution)
4.	Solid Waste Management Collection, disposal, and management of solid waste.	Documentation verifications-Monitoring Checklists and Reports etc.	Before, during and after Subprojects execution	SDU-TO	Weekly	VCs	Before, during, and after execution of subprojects	Annually (at the time of subprojects execution)
5.	Noise Planning and scheduling of machinery operation and high noise activities.	Documentation verifications-Monitoring Checklists and Reports etc.	Before, during and after Subprojects execution	SDU-TO	Weekly	VCs	Before, during, and after execution of subprojects	Annually (at the time of subprojects execution)
6.	Occupational Health and Safety Provisions of WB Group's Environment, Health and Safety (EHS) Guidelines Labor Working Conditions	ESS & SSS will visit at least once in a month during construction of each sub-project.	Monthly	SDU-TO	Weekly	VCs	Before, during, and after execution of subprojects	Annually (at the time of subprojects execution)

S#	Measures/Activities to be monitored	Monitoring						
		PIMU Level	Frequency	Tehsil Level	Frequency	Field (Village) Level	Frequency	Frequency
	Signs of stagnation of water if any and site housekeeping. Provision of appropriately stocked first-aid equipment and Personal Protective Equipment's (PPEs); Check Training records Check accidents records.							
7.	Impacts on Women, Children, and Vulnerable Groups Women's participation during project preparation and execution Participation of vulnerable groups	ESS & SSS will visit at least once in a month during construction of each sub-project	Monthly	SDU-TO	Weekly	VCs	Weekly	Annually (at the time of subprojects execution)
8.	Social Conflicts	ESS & SSS will visit at least once in a month to monitor the implementation of SMPs and ARAPs and Entitlement Frameworks during execution	Monthly or on need basis	SDU-TO	Weekly	VCs	Daily	Annually (at the time of subprojects execution)

S#	Measures/Activities to be monitored	Monitoring						
		PIMU Level	Frequency	Tehsil Level	Frequency	Field (Village) Level	Frequency	Frequency
9.	GRM Implementation	ESS &SSS will visit at least once in a month to monitor GRM activation	Monthly	SDU-TO	Weekly	VCs	Daily	Annually (at the time of subprojects execution)
10.	Compliance of Child labor & minimum wages etc.clause	ESS &SSS will visit at least once in a month to monitor the compliance of Standard clause in the contracts related to child labor,bonded labor,equal wages explicit prohibitions, etc)	Monthly	SDU-TO	Weekly	VCs	Daily	

7.7. Training/Capacity Enhancement Framework

Assessment of Existing Capacity at LGCDD

In terms of compliance of social and environmental safeguards, LG&CDD has carried out and is successfully implementing the following projects funded by WB/ADB:

LG&CDD donor funded Projects

Sr#	Project	Donor	Status	Executing Body	Geographic Scope
1	Punjab Municipal Services Improvement Project (PMSIP)	World Bank	Completed 2006-2013	PMDFC	37 TMAs
2	Punjab Intermediate Cities Improvement Investment Program (PICIIP)	Asian Development Bank	On-going	PMU under PLGB	9 Cities
3	Punjab Cities Program (PCP)	World Bank	2019-2024	PMDFC	16 Cities/MCs

Punjab Municipal Services Improvement Project (PMSIP) was initiated by Government of Punjab with technical and financial assistance of World Bank, started in June 2006 and completed in 2013. The objective of the project was “To introduce performance based culture in TMAs to improve municipal service delivery in a viable and sustainable manner.”

The project was implemented in 37 Tehsil Municipal Administrations (TMAs) of Punjab while an extension of 3 years was granted by World Bank with the approval from Government of the Punjab for scaling-up of different capacity building interventions in additional 68 TMAs of Punjab, taking the total number of partner TMAs to 105 (all non-city district TMAs in Punjab).

Capacity Building-Under capacity building component, different system improvements and capacity building activities were implemented in 105 TMAs of Punjab (all TMAs except those falling under 5 City District Governments of large cities).

The capacity building interventions included:

- Website development for TMAs for dissemination of information
- Introduction of operation & maintenance framework for sustainability of municipal services
- Planning exercise of towns for integrated urban development
- Mapping of municipal services using Geographic Information System (GIS)
- Introduction of Computerized Financial Management System for financial accountability
- Introduction of Complaint Tracking System for redressal of citizen grievances
- Development & establishment of centralized web-based performance mentoring system for LG & CD Department
- Introduction of Performance Management System for improved municipal service delivery
- Implementation of ESMP and compliance of social and environmental safeguards

Punjab Intermediate Cities Improvement Investment Program(PICIIP) –being executed in 9 cities i.e. Sahiwal, Sialkot, Sargodha, Rahimyar khan, Bahawalpur, Muzaffargarh, Dera Ghazi Khan, Multan and

Rawalpindi with the financial and technical support of ADB (including compliance of social and environmental safeguards).

PICIIP aims to the urban sector: create world class Infrastructure and services; strengthen systems of urban governess; and significantly improve urban planning and management frame work in Intermediate Cities.

Capacity Building-Construction of Punjab Local Govt. Academy at Lahore and Rehabilitation of PLGA at Lala Musa is to provide trainings for 10,000 officers from BS11-BS 15, 1696 officers from BS-16-BS-20 and 122,500 officers from elected representatives from neighborhood and Village/Panchayat Council Govt. personnel of Punjab. The existing PLGA academy at Lalamusa is also being improved to meet training needs of local government employees. These academies Provide LG personnel a work environment that is conducive to professional development and personal growth for the attainment of LGA's organizational goals and objectives.

Punjab Cities Program (PCP)- is aligned with the World Bank Group's Pakistan Country Partnership Strategy (CPS) FY15-20. T PCP is financed through a hybrid of Investment Project Financing (IPF) and Program-for-Results (PforR) instruments. PCP aims to contribute towards Bank's overarching goals of ending extreme poverty and promoting shared prosperity by delivering improved urban infrastructure inclusively and in ways that enhance the economic groeth and development in the participating cities.PCP is being executed in 16 cities /Municipal Committees/Corporations i.e. Daska, Hafizabad , Jhelum ,Kamoki, Muridki and Wazirabad (Gujranwala Region); Gojra, Jaranwala, Jhang, Kamalia and Okara (Faisalabad Region); and Bahawalnagar, Burewala, Khanewal, Kot Addu, and Vehari (Khanewal Region)

Capacity Building- Under PCP, a detailed capacity building program has been designed for 16 cities /MCs to ensure the successful implementation of ESMF and compliance of the environmental and social mitigation measures. The objectives of the environmental and social trainings are to provide basic knowledge and information on the key environmental and social issues associated with the proposed interventions and compliance of ESMF including preparation of instruments (IEE/EIA /ESMPs, RAPs and ARAPs), to the key program personnel including the ESFPs⁶⁴, MCs and Program staff.

In spite of carrying out environmental and social safeguards compliance for donor funded projects; the E&S SG implementation experience rests with various sections/bodies within LG&CDD; and as such requires consolidation and further strengthening through dedicated staffing; continuous trainings and capacity building measures. Accordingly a "Capacity building/training framework" has been proposed hereunder for PRSWSSP. In addition, the project will also encourage and promote that the PIMU/SDUs will benefit from the experience already gained; through proactive cross-learning between/among LG&CD's different sections/bodies".

Training/Capacity Building Plan under PRSWSSP

To ensure the successful implementation of ESMF and compliance of the environmental and social mitigation measures, hiring and retaining of a dedicated Enviornmental Specailista at PIMU; strengthening of relevant technical staff and TCs', SDUs, village Panchayats and community competencies is essential. **Component 2- Behavior Change and Capacity Development** sub

⁶⁴ .Environmental and Social Focal Persons nominated for the compliance of ESMF. Municipal Officers-Infrastructure and Municipal Officers- Planning have been nominated as ESFPs for relevant 16 MCs

component 2.1 & 2.2 Awareness Raising Related to Covid-19 and Behavior Change Campaign, Awareness Raising Campaign Related to Safely Managed Water and Sanitation are part of PRSWSSP. To ensure the implementation of these components ESMF will also focus on behavior change campaigns and capacity building of key Project personnel including the SDU-TOs at Tehsil level, Panchayat/Village Councils at village level and general Project staff at PIMU level and Behavior Change Campaign at local community level.

The objectives of the environmental and social trainings are to provide basic knowledge and information on the key environmental and social issues associated with the proposed interventions and compliance of ESMF, to the key Project personnel including the TCs', SDUs, village Panchayats and general Project staff.

Trainings of the Project staff at TCs, SDU, and Village Panchayats will be carried out for the environmental and social management of the subprojects.

Environmental and Social Aspects

A District/Tehsil wise overhauling of waste management, sanitation infrastructure development and water supply infrastructure development etc. will require comprehensive trainings & demonstrations for successful implementation of all the components under PRSWSSP for long-term sustainability. The environmental & social aspects identifications and mitigations integrated with the awareness raising will equip the Project facilitators for a keen sight of Project component related environmental issues and their solutions and mitigation measures. The trainings will include but not limited to the subjects of responsible social development and eco-friendly approach for appropriate and feasible subprojects construction with immediate and long- term solutions for sustainable uses.

ESS& SSS working under PIMU will have the core responsibility to execute the environmental and social aspects training programs at PIMU, SDU and field level. They will also be responsible for preparing and maintaining the reports for each of the trainings conducted at various project units. Further, SDU-TOs will be responsible for the overall implementation of training plan at district level (VOs and communities) and will also ensure proper relevant documentation.

Keeping in view the current technical capacity at SDU-TO level, it is recommended to utilize the services of NGOs for workers/labor trainings on Environment. The project expects to hire NGOs that will provide continuous trainings during the life of the project. Content and audience of training will vary according to needs, but will include SWM, contractor E&S, Health/stunting, water conservation, hygiene, etc.

Compliance monitoring will be done at 3 levels: (1) an engineering supervision firm will oversee construction in each village/site and approve contractor's claims upon satisfactory outputs, a project monitoring consultant will supervise a sample of those villages to countersign payment claims. In case of unsatisfactory outputs, payment will not be made, (iii) PIMU and WB missions will supervise all records and make field visits to select sites..

Table 27: Framework for ESMF Trainings under PRSWSSP

Description	Aspects to be Covered	Participants	Responsibility	Frequency
Environmental and social sensitization/ awareness	• PRSWSSP Components • Key environmental and social issues associated with the PRSWSSP and subprojects • Subprojects Design and relevance with environmental and social impacts and mitigations • ESMF implementation procedures /steps • ESMF instruments implementation costs and their inclusion in sub-project's cost - process and procedures	SDUs-TO , Panchayat/ Village Councils	PIMU	At the project briefing level
Environmental and social trainings	• Key environmental and social issues associated with the Project and subprojects • Environmental and social policies and procedures in PRSWSSP-WB and local laws and policies • ESMF implementation procedures /steps • Subprojects screening and categorization procedures • Subproject specific ESMPs, SMPs and other instruments and their components • Instruments implementation costs and their inclusion in sub-project's cost procedures • Sub-projects mitigation measures compliance and monitoring requirements and monitoring Checklists uses in field • Site-specific mitigation plans compliance • Subprojects reporting and record maintaining at district level • GRM • Community consultation and disclosure of information	SDUs-TO , Panchayat/ Village Councils	ESS &SSS - PIMU and WB team may be requested for this training/ sessions	Once at initial stage and then Quarterly

	Entitlement Matrix and RPF implementation procedures			
Occupational Health and Safety (OHS)	- Use of PPEs - GoPunjab Safety SOPs in Pandemic - SOPs for Environment, Health & Safety for construction workers/labor (including women labor)	SDUs-TO, any contractors on-board	PD-PRSWSSP, ESS, Gender Specialist & SSS-PIMU or may be invited some external source	Biannually or need base
ESMPs/EMPs mitigation measures compliance in field- at subprojects site	Mitigation measure plan of relevant subproject	Panchayat/ Village Councils Contractors, Labor/ workers	SDUs-TO	Before execution of sub-projects and then need base
Awareness raising	- Sludge Management - Water Conservation - Wastewater Management - Community Mobilization - Animal Waste Management - Covid 19	Communities and local beneficiaries	VCs	Quarterly

Table 28: Training Aspects/Requirements for Various Groups of Participants

Training Aspects/Requirements for Various Groups of Participants	PRSWSSP staff at PIMU, SDU	Consultant	SDUs	TCs	Project Beneficiaries
Key environmental and social issues associated with the Project and sub-projects	S	C	T	T	A
- ESMF compliance Process and Procedures during the life cycle of subprojects - Subprojects screening and Categorization - Category wise instruments Preparation - Subproject specific ESMPs and their components - Mitigation Plans and cost estimations - ESMF instruments compliance, monitoring and reporting process and procedures - Post projects Evaluation and Lessons Learnt	S	C	T	T	NA
ESMP preparation and templates	S	C	T	A	NA
Entitlement Matrix and RPF	S	C	T	T	A
Policy and Legal Framework for environmental and social management including WB Principles	S	C	T	A	A
All the Frameworks included in the ESMF main document	S	C	T	A	NA
GRM; Community consultations	S	A	T	T	A
Ability to identify and incorporate mitigation measures provided in ESMF	NA	C	T	T	NA
Ability to oversee the supervision and monitoring to ensure compliance with ESMF	NA	C	T	T	NA
Ability to review environmental/social instruments prepared by the Consultants	NA	C	T	T	NA
Ability to monitor and supervise work at the field level w.r.t. environmental and social issues	NA	C	T	T	NA
Ability to capture and report on environmental/social issues outlined in ESMF	S	T	T	T	A
Assessment of Environmental and Social Progress in accordance with ESMF	S	C	T	T	NA

Legend:

T = Detailed training,
S = Sensitization to the issues,

C = Capacity-strengthening,
A = Awareness-raising,

NA=Not Applicable

7.8. Disclosure of Sub-Projects Information

The ESMF will be uploaded on the project websites, once cleared by the World Bank, hard copies shall be sent to all institutional stakeholders and all Field offices. The ESMF will be disclosed internally within the World Bank. Before start of physical works on the project, the Executive Summary of the ESMF will be translated in national / local languages and will be communicated to stakeholder communities and will be uploaded on the PMIU & LG&CDD websites. The subproject specific ESMPs, SMP as apart of ESMP ARAPs will also be cleared by the World Bank and disclosed and available on relevant official websites

7.8.1. Reporting and Documentation

A robust reporting mechanism can enable Project progress to be followed up, any prevalent hindrances to Project implementation to be identified and rectification measures to be setup if so required. Such a system will allow the PIMU and LG&CDD to track the advancement of the Project and reconcile these with the overall objectives and targets of the Project.

7.8.2. Reporting & Documentation Framework

Regular and comprehensive reporting will be conducted throughout the implementation of the Project. ES & SSS-PIMU, Consultant and SDUs will ensure a constant surveillance of the project progress and deliverables through preparation and submission of these reports provided in the following:

Table 29: Reporting Requirements under each component

Sr.#	Type of Reporting	Frequency	Responsibility	Submitted To
1.	Field Surveys and Visit Reports and consultation with communities including women and vulnerable groups (with date, time, venue, discussion points, public grievances, and feedback (if any) and photographs)	Within a week after visit/survey	SDU-TO	PIMU-PRSWSSP
2.	Detail reports regarding subprojects identification and design including subproject wise proposed activities	At design stage	SDU-TO	PIMU-PRSWSSP
3.	Environmental and Social Screening and SAR. Filled Screening Checklists and Screening Reports for each sub-project	Within a week after screening	SDU-TO	PIMU-PRSWSSP
4	Environmental and Social Monitoring Checklists and Reports	Within a week after monitoring	SDU-TO	PIMU-PRSWSSP

5	Progress Reports	Quarterly and biannual ⁶⁵	SDU-TO	PIMU-PRSWSSP
6	TPV Reports	3 times during the life of the project.	TPM- Consultant	PIMU-PRSWSSP
7	Training reports	Within a week after the event	PIMU& SDU-TO	PIMU-PRSWSSP
8	ESMF Progress-Detailed Reports	Bi-annual and Annually	PIMU& SDU-TO	World Bank
9	Annual Reviews and lessons learnt	Annually	PIMU& SDU-TO	World Bank
10	Project completion report	End of project completion	PIMU& SDU-TO	World Bank

65. Quarterly Progress Reports (QPRs) will be at PMIU level while Biannual Progress Reports will be shared with World Bank.

7.9. Grievance Redress Mechanism (GRM)

7.9.1. Overview and Scope

The Grievance Redressal Mechanism proposed here in ESMF will be applicable throughout the course of project during the entire project implementation and will cater to both the directly and indirectly affected populations. This GRM is proposed as a requirement of WB GRM policy to address the public grievances regarding environmental and social issues that may emerge during and after PRSWSSP sub-projects implementation. It will also cater to manage any disconnects that emerge from the field level and that has significant implications for effective implementation of the sub-project interventions.

In an effort to deter fraud and corruption, the use of a dedicated mobile application has been proposed for reporting of grievances from field level to district and provincial headquarters. This will not only provide a coherent system of checks and balances but will also enable swift redressal and effective monitoring of complaints.

The PIMU at LG&CDD level will serve as the Secretariat for the Grievance Redressal Committee (GRC-Directorate) that will be responsible for providing oversight on the entire GRM process at a strategic level and monitoring of complaints management.

Through PRSWSSP, service delivery improvement in 2000 targeted villages has been envisaged. Water supply & sanitation are imperative daily basis facilities. Due to, continuous use and all-time requirement, there is tendency of routine O & M requirement of the facilities. O&M will be needed as soon as project interventions are completed in village. Due to huge number of beneficiaries spread, a comprehensive complaint redressal model is indispensable for SDU. The Grievance Redress Mechanism (GRM) will be consistent with the Component 4 Project Management and Monitoring sub component 4.2 Grievance Redressal Model is part of Project of PRSWSSP. Project activities may cause social friction if Projects do not have an effective GRM.

7.9.2.Objectives of Grievance Redress Mechanism

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

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

7.9.3.Communication & Awareness

The final processes and procedures for the GRM will be translated in to local languages and disseminated at all sub-project locations. These shall be made available (in both leaflet and poster format) to all sub-project locations through the offices of each SDU. Dedicated male and female Grievance Focal Persons for each sub-project location will play an instrumental role in spreading awareness regarding the GRM, including the use of information technology for reporting and monitoring of complaints.

7.9.4. Records and Monitoring

The Project Director's Office will maintain an electronic database at the PIMU that will provide a summary of complaints received and mitigations. The PD office will also provide an analysis of the grievances at each sub-project location using a pre-designed M&E template that will give insight in to the type of complaints received and qualitative and quantitative review of grievance redressal. The PD's office will also be responsible for uploading the actions and results for each grievance for each sub-project location on a periodic basis to the Project website. The dedicated mobile application that will be used to communicate grievances will provide the basis for recording complaints both at the provincial and district levels.

Apart from the electronic database that will be maintained at the PIMU level, a manual register of all complaints and actions taken will be maintained by the Environmental and Social Focal Persons for each District at the Office of the SDU-TOs and a manual register of all day to day complaints and their grievance redressal details will be maintained by VOs their office

7.9.5. Proposed Institutional Mechanisms

It is proposed to establish the following prior to commencing project implementation activities including pre-construction activities:

Tehsil Level-Public Complaints Center (PCC) in SDU-TO will be responsible to receive, log, and resolve complaints at site and in Village level. Complainant would be able to launch complaint on a toll free number, app, message or call.

Teir 1: village level –Panchayt/Village Councils made under Punjab Local Government (Amendment) Ordinance 2021 will act as the 1st tier of GRM at village community level.

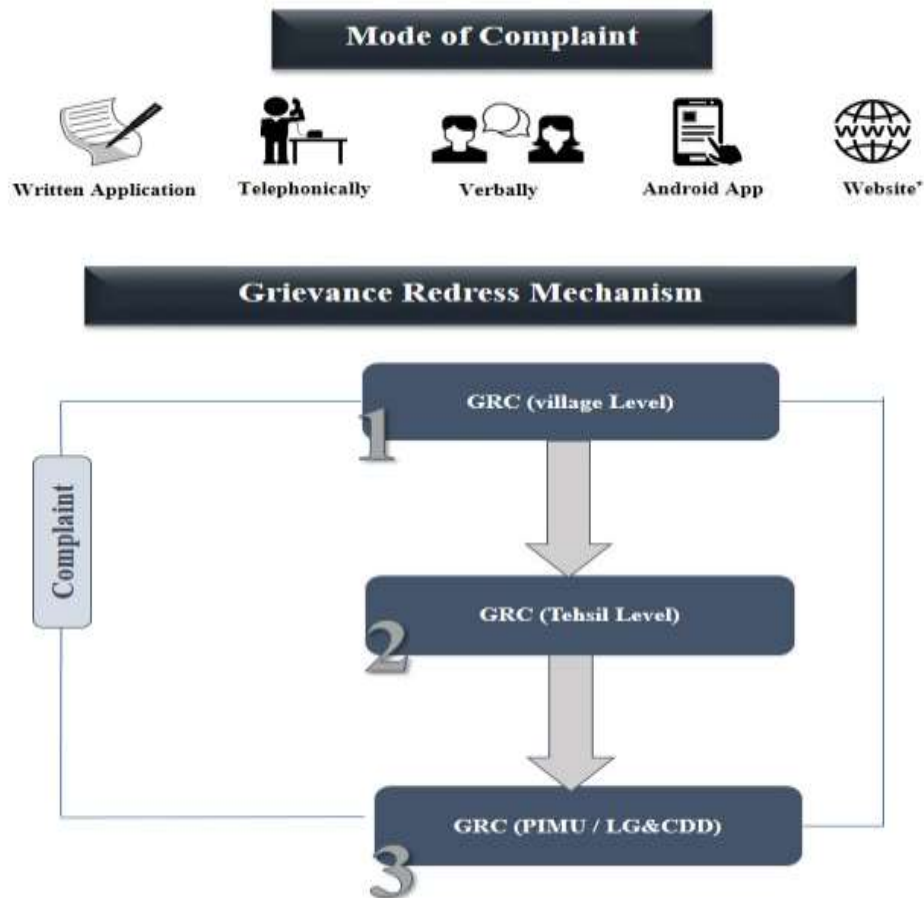
Teir 2: Grievance Redress Committee (GRC-Tehsil Level) in SDU-TO will be established for each district that will manage GRM aspects for all sub-project locations in each district including decisions to be taken, actions and monitoring of complaints resolution at sub-project level.

Teir 3: PIMU Level-GRC at PMIU (LG&CDD) will be responsible to oversee the overall functions of the GRM at a strategic level including monthly review.

7.9.6. GRM Process Implementation

1. Through the envisaged system, complainant would be able to launch complaint on a toll free number, app, message or call. (GRM will be accepted the anonymous grievances)
2. Details of the complaints and the complainants will be entered in the system and a complaint number will be provided to the complainant through SMS.
3. In SDU a specific person will be designated to monitor the system and issue necessary instruction to relevant quarter for necessary action.
4. The GRM will provide an interface to complainants to check the status of their complaint and a dashboard for SDU & PIMU to monitor the progress on the complaints.
5. The system will bridge the gap between the masses and the service provider.

6. Monitoring officers will precisely know the details of pending complaints in every SDU. Performance of the SDU could also be easily monitored through it.
7. The GRM will have a built-in escalation system for moving unresolved complaints to higher levels.



GRM Procedures and Timelines

The tracking and documenting of grievance resolutions will include the following elements:

- Tracking complainant(s) from subprojects sites (field and community level) to PIMU;
- Dedicated staff to update the database routinely;
- Promote transparency, publicize how complaints are being handled, and periodically evaluate the overall functioning of the mechanism;
- Processes for informing stakeholders about the status of a case; and
- Procedures to retrieve data for reporting purposes, including the periodic reports form Village and Tehsil and document into the monthly progress reports at PIMU.

GR (Village level) will be responsible to receive, log, and resolve complaints at village level. The Grievance Redress Committee at the village Panchayts will review and identify actions to be taken to address the

complaints at its weekly meeting. If not resolved timely then complaint would be referred to GRC-Tehsil Level (SDU-TO) within 3 days after receiving.

GRC-SDU-TO will try to resolve the complaints in a satisfactory manner anyhow. If not satisfactorily resolved by the village panchayats/coouncils and Tehsil level, then the grievance will be referred for consideration by GRC at the PIMU/LG&CDD level within one week.

Every effort will be made to address or resolve grievances within the following fixed timelines, which will be an indicator against the performance of the handling system. Acknowledgement of a written submission will be issued to the complainant within three working days.

If the complainant is not satisfied, the complaint will have the option to seek redress through court of law.

7.10. Gender Framework

Gender is a key issue in social management in view of the different vulnerabilities of affected men and women. In view of their higher vulnerability levels, specific measures are proposed to enable the affected women-especially those who are poor, to cope with the project impacts. The process of gender inclusive social management and resettlement planning includes gender analysis, project specific gender considerations and a gender strategy and action plan. Gender Based Violence Good Practice Notes Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing involving Major Civil Works (World Bank launched in 2018) will be the part of every contract that is awarded by the project. Gender Framework will be implemented and monitoring by Gender Specialist at PIMU.

Table 30: Stepwise Gender related issues and their mitigation measures

Activity	Project Impacts/ Risks (Resettlement & Construction)	Mitigation Measures	Frequency- Time frame
Communication/ Consultations and Information Dissemination	Least or no information regarding eligibility and entitlement of compensation to the APs including female members.	Information dissemination to the APs including female members through continuous consultative meetings and distribution of brochures and pamphlets/leaflets.	Continuous activity during the implementation of ESMP, SMP and ARAP.
	Lack of awareness of female AP about the project impacts and their mitigation measures	Involve the female Aps in regular consultative process of the project	Continuous activity during the implementation of ESMP.
Gender Segregated Payment of Compensation	Non-payment or delay in payment of compensation (including trees, crops & allowances/ livelihood restoration) to female APs.	- Maintaining gender-disaggregated data for all ESMP, SMP and ARAP. - Progress reports and monitoring data should also be gender segregated. - Review the gender segregated status of payment (trees, crops & allowances/ livelihood restoration) to the male and female APs.	Continuous activity during the implementation of ESMP, SMP and ARAP.

Activity	Project Impacts/ Risks (Resettlement & Construction)	Mitigation Measures	Frequency- Time frame
		Categorization of reasons for non-payments/or delay in payments and accordingly development of action in consultation with the stakeholders.	
Data Management/ Data Depository	Delay in the implementation of ESMP/SMP/ARAP that deteriorates the process of eligibility & entitlement for compensation especially for women.	Develop a gender segregated database covering the status of implementation of ARAP and EAI/ESMP and updating of database on regular basis.	Continuous activity during the implementation of ESMP,SMP and ARAP.
Influx of Labour, especially if from outside the project area.	Possibility of increase in Sexual Harrassment (SH) and Sexual Exploitation and Abuse (SEA) in the project area.	Awareness trainings for community and Labor. Referrals to prevention and treatment services Strengthen Prevention in Contractor Documents Create or Strengthen SEA/SH Referral Helplines Third Party monitoring of SEA/SH issues	Periodically, and consistently, during project implementation.
Gender Sensitive Grievance Redress Mechanism and Complaints Handling	- Complaint about disorder of pressing needs of women/ local community relating to the project that affect the mobility during the construction activities - Difficulties in having access to social amenities - Disturbance in privacy during construction activities.	- Awareness about the gender sensitive GRM and complaint handling process through consultative meetings, distribution of pamphlets and mobile penetration. - Ensure that the existing GRM is accessible to the local community, is gender sensitive, and has SEA/SH Protocols. - Carrying out project implementation activities in consultation with the community/ local women to avoid peak hours working activities of women. - Training – capacity development for gender-inclusive project design and implementation.	Continuous activity during the implementation of ESMP,SMP and ARAP.

Activity	Project Impacts/ Risks (Resettlement & Construction)	Mitigation Measures	Frequency- Time frame
Female skill trainings and Capacity Building of female training institutes at the community level.	• Deficiency of knowledge • Access to adequate training	• Design Training modules with specific focus on women • Conducting trainings using female trainers • Prepare training proceedings • Encourage women participation in project implementation • Create safe and culturally appropriate environment at female training institutions • Ensure female accessibility to the trainings	Continuous activity during the implementation of ESMP, SMP and ARAP.

7.11. Communication Framework

Categories of Reports/Documents for Proactive Communication and Disclosure of Information:

- Environmental and Social Management Framework (ESMF)
- Environmental and Social Management Plans (ESMPs) of Individual Subprojects
- Environmental and Social Monitoring Reports during project implementation
- Involuntary Resettlement Monitoring Reports Consultant during project implementation
- Stakeholders Engagement Plans and Activities Reports including information disclosure and consultation with affected people and other stakeholders- in ESMPs
- Summary of comments and concerns received from APs and other stakeholders and how these comments have been addressed in project design and mitigation measures, with special attention to the needs and concerns of vulnerable groups, including women, the poor, and Peoples with Special Needs
- Public Communication and Disclosure of Information Mechanism
- List of communication and information disclosure facilities
- Directory of relevant Government officers
- Announcement of jobs, recruitment and tenders related to environmental and social facilities under the Project
- Details of environmental and social benefits and initiatives created or generated by the PRSWSSP
- All laws/ Regulations and policies related to social and environmental management and applicable on the Project including international protocols related to environment and those which are applicable in Punjab.

Mediums of Communication

- Website (of PRSWSSP link, LGCD, World Bank)
- Social Media
- Press Briefing
- Press Release
- Awareness Seminars

- Notice Board
- Email Notification
- Hard Copy
- Newspaper
- Newsletters
- Information, Education, Communication (IEC) Material
- Public Consultation
- Notable Persons of community/sub-projects areas

Table 31: Communication Framework

Communication Framework															
Communication			Medium(s) of Communication												
#	Name of Information Description	Frequency of Disclosure	website of PRSWSS P Link	Website (s) of MCs/ TCs	LGD Website	WB website	WB Team ⁶⁶	Email Notification	Hard Copy	Social Media	Newspaper	IEC Material	Public Consultation	Ext. Stakeholders ⁶⁷	Meetings
1	Bidding Documents ⁶⁸	Event Base (whenever it occurs)	✓	✓	✓			✓	✓						
2	ESMF	(Once approved by World Bank Team and then Event Basis (whenever change occurs))	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓
3	Laws/ Regulations/ Policies ⁶⁹	Permanent basis and whenever any amendments may occur or new	✓	✓	✓			✓	✓	✓		✓	✓	✓	✓

⁶⁶ May include Task Team Lead, Environment Specialist, Social Safeguards Specialist or any other expert as directed by the TTL

⁶⁷ All the relevant Government Organizations/Department and relevant NGOs and INGOs

⁶⁸ Bidding documents of all the sub-projects under PRSWSSP

⁶⁹ All local, national and international laws/regulations/policies/Protocols/Guidelines/SOPs applicable on GoPunjab for social and environmental management

Communication Framework															
Communication			Medium(s) of Communication												
#	Name of Information Description	Frequency of Disclosure	website of PRSWSS P Link	Website (s) of MCs/ TCs	LGC D Website	WB website	WB Team ⁶⁶	Email Notification	Hard Copy	Social Media	News paper	IEC Material	Public Consultation	Ext. Stakeholder ^{s67}	Meetings
		legislation approved in environment and social domain													
4	ESMPs/SMPs	Event Base (whenever required) Before subproject construction	✓	✓			✓	✓	✓				✓		
6	ARAPs	Event Base (whenever required) Before subproject construction	✓	✓			✓	✓	✓				✓		
8	Directory of (PRSWSSP team/ TCs)	Permanent Basis (or whenever change occurs)	✓	✓				✓	✓					✓	

Communication Framework															
Communication			Medium(s) of Communication												
#	Name of Information Description	Frequency of Disclosure	website of PRSWSS P Link	Website (s) of MCs/ TCs	LGC D Website	WB website	WB Team ⁶⁶	Email Notification	Hard Copy	Social Media	News paper	IEC Material	Public Consultation	Ext. Stakeholders ⁶⁷	Meetings
9	Directory of stakeholder departments and institutions	Permanent Basis (or whenever change occurs)	✓	✓	✓			✓	✓					✓	
10	Detail Reports of Public Consultations	Throughout the project cycle	✓	✓	✓		✓	✓	✓	✓			✓	✓	✓
11	TPV Reports	3 times during the life of the project.	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓
13	Environmental and Social Monitoring Reports	Throughout the subproject cycle	✓	✓	✓		✓	✓	✓						✓
17	Stakeholders Engagement Plans	Permanent Basis (or whenever change occurs)	✓	✓	✓		✓	✓	✓	✓			✓	✓	✓
18	Comments and concerns received from Affected People	Throughout the project cycle	✓	✓	✓		✓	✓	✓				✓	✓	✓

Communication Framework															
Communication			Medium(s) of Communication												
#	Name of Information Description	Frequency of Disclosure	website of PRSWSS P Link	Website (s) of MCs/ TCs	LGC D Website	WB website	WB Team ⁶⁶	Email Notification	Hard Copy	Social Media	News paper	IEC Material	Public Consultation	Ext. Stakeholder ^{s67}	Meetings
19	Environmental tendering, procurements and jobs	Need basis	✓	✓	✓			✓	✓	✓	✓				
20	Details of environmental benefits and initiatives created or generated by the PRSWSSP sub-projects	Need Basis	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
21	List of communication and Public Disclosure facilities	Need Basis	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
23	Bi-annual and Annual Progress Reports	After 6 months and an year	✓	✓	✓		✓	✓	✓						✓
24	GRM & its Uptake	Permanent Basis	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

7.12. ESMF Implementation Budget

The cost estimates to implement ESMF is estimated as **Rs. 403,458,732/-** Details are provided in below table. This cost will be included in the overall Project cost. Additional costs could be included in the subproject specific ESMPs that would become part of each bidding/BOQ documents. The contractor(s) however shall be paid against the actual execution with evidencial proof of respective ESMF/ESMP activity

Table 32: ESMF Implementation Budget

Sr. #	Activity	Description	Year 1 (PKR)	Year 2 (PKR)	Year 3 (PKR)	Year 4 (PKR)	Year 5 (PKR)	Year 6 (PKR)
1	ESMP Implementation estimated Cost (lumpsum)	For each construction site	5000000	5000000	5000000	5000000	5000000	5000000
2	Training/Awareness Raising /Capacity Development Program	Public Consultation	200,000	200,000	200,000	200,000	200,000	200,000
		ESMF Compliance- Trainings for SDUs/TCs	500,000	500,000	500,000	500,000	500,000	500,000
		EHS Trainings	200,000	200,000	200,000	200,000	200,000	200,000
3	Reporting and monitoring	Environmental and social internal monitoring	200,000	220,000	220,000	250,000	250,000	250,000
		Progress Reports, Training Reports, Annual Reviews, Project Completion Report	50,000	50,000	50,000	100,000	200,000	200,000
4	Staff Procurement ⁷⁰	Environmental Safeguards Specialist (01)	350,000x12 = 4,200,000	385,000x12 = 4,620,000	423,500x12 = 5,082,000	465,850x12 = 5,590,200	512,435x12 = 6,149,220	563,678x12 = 6,764,136
		Gender Specialist-PMIU(01)	300,000x12 = 3,600,000	330,000x12 = 3,960,000	363,000x12 = 4,356,000	399,300x12 = 4,791,600	439,230x12 = 5,270,760	483,153x12 = 5,797,836

⁷⁰ 10% influential rate will increase on slaray each year on each staff procured

Environmental & Social Management Framework (ESMF)

							5,270,760	
		Social Safeguards Specialist(01)	350,000x12 = 4,200,000	385,000x12= 4,620,000	423,500x12= 5,082,000	465,850x12= 5,590,200	512,435x12= 6,149,220	563,678x12= 6,764,136
		Environmental Officers (16)	200,000x12x16= 38,400,000	220,000x12x16 = 42,240,000	242,000x12x16= 46,464,000	266,200x12x16= 51,110,400	292,820x12x16= 56,221,440	328,102x12x16 = 62,995,584
5	GRM and	Part of overall Program						
6	Third Party Monitoring	Part of overall Program						
	Total		52,550,000	57,610,000	63,154,000	69,332,400	76,140,640	84,671,692
		Grand Total						423,458,732/-

CHAPTER 8 RESETTLEMENT POLICY FRAMEWORK

This Resettlement Policy Framework (RPF) has been prepared under PRSWSSP where land may be acquired for small-scale interventions if land will be needed that cannot be acquired through VLD procedures.

8.1 Voluntary Land Donation

PRSWSSP exacting agency i.e. LG&CDD will completely avoid private land acquisition (other than land donation as per the procedures established in Section 6.5 of this ESMF) by the community. Whenever there is additional land requirement (temporary or permanent) other than community donation, the PIMU will follow the Resettlement Policy Framework (RPF).

8.1.1. Voluntary Land Donation Protocol

For construction of community room and oxidation ponds/waste water treatment facility over a small scale, community land will be used through process of land donation. LG&CDD will interact with the land owners and facilitate voluntary donation of land required for taking up sub-projects under PRSWSSP. This use of voluntary donation option will be limited to small piece of land. 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 PRSWSSP will ensure that the process of voluntary donation of land is meticulously documented to avoid confusions, misunderstandings, litigations, etc. at a later stage. Original copies of all documentation of voluntary donation of land will be kept with the both district offices and provincial office of LG&CDD. Complete documentation along with a copy of the final document will be at PIMU office for records and for inspection at a later date.

VLD is only suitable for community driven projects where the landowner and/or community wish to 'gift' land parcels or small areas for small-scale community infrastructure that will be of direct benefit to the donor's community.

8.1.2. When VLD Is Applicable

For land donation the following rules will apply:

- Alternatives and the viability of all locations or sites have been considered;
- The Titleholder should not belong to the vulnerable sections. i.e.
- Households (with a valid proof), as per provincial poverty line for rural areas;
- Households without a proof of the same and belonging to the following social categories:
 - Women headed households with women as sole earner
 - Minority /handicapped persons, and is subject to any of the following impacts:
 - loses land holding;
 - loses shelter; and loses sources of livelihoods.
- 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

This should not require any physical relocation of the Titleholder;

The land must be jointly identified by the Revenue Department/ land owners /VO 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.

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 Titleholder donating land should have made to understand that they will have equal access to the infrastructure built on the donated land like any other community member and that they cannot claim for any priority treatment. Grievance Redress Mechanism must be available.

The donations and the process followed is documented, monitored and reflected in the monitoring reports.

8.1.3. When VLD Is Not Applicable

VLD is not applicable under the following scenarios:

- Where inadequate consultation with land donors results in lack of understanding about the terms and conditions of the donation;
- In lieu of formal procedures for land acquisition where these do not exist;
- Where donor property owners, landowners or customary rights holders do not support, or will not directly benefit from, the Project;
- Where conflicts over land exist, including customary collective ownership;
- Conflicting land titling that make it difficult to establish with certainty who has a right to own, donate and use a specific parcel of land;
- Where donors did not provide their informed consent and were subject to political or social pressure and coerced into making the donation.

8.1.4. Process for Voluntary Donation

This section provides guidance on the process for VLD, namely on how to:

- Determine and document the appropriateness of VLD in the project context;
- Verify the requirements of the donation and the formalization of the donation;
- Carry out due diligence on the owners and users of land donated;
- Ensure appropriate consultation and disclosure;
- Establish informed consent of the person donating the land; and
- Establish grievance redress mechanism.

It is necessary to follow a clear process for the donation, and to prepare and maintain documents that demonstrate such process. Each step set out below should be addressed in the context of the specific project, and fully documented.

if the land or land owner is not on the negative list specified in 8.1.2 and 8.1.3.

(i) Determine and document that VLD is appropriate in the circumstances of the project.

- The team should record the reasons why it thinks that the donation of land is appropriate for the project. The project team should identify (in as much detail as possible):
- What the land will be used for;
- How much land the project will require on both a permanent and temporary basis;
- How much of the land will be donated;
- The terms of the donation;
- The identities of the parties who intend to donate;
- The beneficiary of the donation; and
- Any details that are relevant to why donation may be appropriate.

(ii) Verify the requirements to transfer, and formalize the transfer of the land

It is important to understand the process that should be followed to transfer the land, and appropriate ways to formalize the transfer so as to achieve certainty for both the transferee of the land and the project. An important consideration will be how transparent the process and the decision making process actually is, and what can be done to enhance the process.

(iii) Conduct due diligence on who owns and uses the land

Given the specific issues surrounding land ownership, it is important that the project team carries out careful due diligence to understand the type of land rights that exist in the project area, and to identify any particular issues relating to land ownership and use. Thereafter, a more specific due diligence must be conducted on each parcel of land proposed for donation to identify:

- The owner or owners of the land;
- The users of the land, or any parties that occupy the land (either physically or through ownership of an asset or conduct of livelihood or business activities on the land);
- Any competing claims of ownership or use;
- Structures and assets on the land;
- Any encumbrances on the land.

(iv) Disclosure and Consultation

The decision to donate must be taken on the basis of a full understanding of the project and the consequences of agreeing to donate the land. Accordingly, the parties that will be affected by the donation (the owners and users of the land) must be provided with accurate and accessible information regarding what the land will be used for, for how long, and the impact the donation will have on them and their families. It is important that prior written notification indicating the location and amount of land that is sought be provided and that its intended use for the project is disclosed.

There should be a clear agreement as to which party will pay the costs associated with the donated land. This could include measurement costs, documentation and notarial fees, transfer taxes, registration fees. It should also include the costs of re-measuring/re-titling the transferee's remaining land and any new documentation relating to it.

(vi) Establishing Informed Consent

It is crucial that the project team is confident that the decision to donate was taken in circumstances of informed consent or power of choice. As discussed earlier, this means being confident that the owner(s) or user(s) of the land understand:

- What the land is going to be used for, by whom and for how long;
- That they will be deprived of the ownership or right to use the land, and what this really means;
- That they have a right to refuse to donate the land;
- Whether there are alternatives to using this land;
- What they will need to do to donate the land (e.g., execute documents, get spousal consents, pay taxes);
- The effect of the donation on their family, and what they can do if they (or their family or heirs) want the land back.

The exact demarcation of land boundary for the project's use;

- Whether there are proposals which would allow other land to be used;
- What they will need to do to donate the land;
- The intergenerational effect of the donation on their family, what they can do if they (or their family or heirs) want the land back.
- The terms and conditions of the land donation must be mutually agreed upon and detailing in a written agreement.

(vii) Documentation

It is necessary to distinguish between: (a) the agreement to donate the land; and (b) the document that carries out and evidences the legal transfer of the land. While it is important to have evidence of an intention and agreement to donate the land, it is equally important to ensure, where required and appropriate, that the land is legally transferred. While the process relating to the legal transfer of the land is frequently complicated and time consuming, it must be addressed. The Format of VLD form is attached in **Annexure Q**. Community consultations will also be carried out before establishing the sites.

8.2 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 Government of Punjab.

8.3 World Bank Resettlement Policy

The WB's experience indicates that involuntary resettlement under development projects, if unmitigated, often gives rise to severe economic, social, and environmental risks: 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 WB OP 4.12 provides safeguards to address and mitigate these impoverishment risks. The overall objectives of the Policy are:

The policy guidelines for resettlement process for the Project are principally derived from the World Bank OP 4.12, "Involuntary Resettlement" and local "Land Acquisition Act, 1894". Summary of general policy guidelines are as follows:

- Involuntary resettlement is to be dealt with from the earliest stages of the Project preparation.
- Involuntary resettlement should be avoided or minimized wherever feasible; exploring all viable alternate Project designs.
- Where unavoidable, resettlement plans should be conceived, developed and executed as development Projects, with resettled people provided sufficient investment resources and opportunities to share in the Project benefits.
- Persons to be displaced should have their former living standards and income earning capacity improved, or at least restored, and should be provided adequate support during the transition period. Community participation in the planning and implementation of resettlement should be encouraged and facilitated. The compensation process should be fully transparent.
- Given the complexity of resettlement in development projects, the concerned Government Agencies and Departments should upgrade their institutional capacity to design and implement Resettlement Action Plans.

The **key principles** of World Bank Involuntary Resettlement Policy are:

- The need to screen the project early on in the planning stage;
- Carry out meaningful consultation;
- At the minimum restore livelihood levels to what (Project Affected Persons) PAPs were before the project, improve the livelihoods of affected vulnerable groups;
- prompt compensation at full replacement cost is to be paid;
- 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; and
- Disclose all reports.

Scope and Triggers: It is expected that land acquisition will not be required for PRSWSSP subprojects and it will be avoided to acquire from private owners and where only small scale or temporary basis acquisition will be required, it will be met through VLD procedures. OP 4.12 will only be triggered for the interventions where land may be required on a larger scale and/or it cannot be acquired through VLD procedures.

Categorization of Instruments:

- **S-1 category of sub-projects**-All those sub-projects having **200 or above affected persons**⁷¹ will be categorized as S-1 and for S-1 projects, preparation & Submission of a Resettlement Action Plan (RAP) will be mandatory. *However, such category of subprojects will not be financed by WB under PRSWSSP.* (In case of other social impacts if identified, Social Management Plan (SMP) will be prepared and made part of ESMP or ESIA).
- **S-2 category of sub-projects**-All those sub-projects having **less than 200 affected persons** will be categorized as S-2 and for S-2 category of sub-projects, preparation and submission of an Abbreviated Resettlement Action Plan (ARAP) will be mandatory (In case of other social impacts (if identified) Social Management Plan (SMP) will be made part of ESMP or ESIA).
- **S-3 category of subprojects**-All those sub-projects having no negative social impacts will be categorized as S-3 and for S-3 category of sub-projects, preparation and submission of E & Social Screening Checklist will be required and no further process of instruments preparation will be needed.

Resettlement Processing Requirements

- Identify possibility of land acquisition and resettlement during screening of sub-projects;
- Minimize resettlement through relocation of the sub-project site, where possible;
- Acquire land through Voluntary Land Donation (VLD) process (format of donation of land is given in **annexure Q**).
- If resettlement is unavoidable, prepare a Abbreviated Resettlement Action Plan (ARAP) in line with WB OP 4.12 and as per the categorization procedures given in ESMF;
- Undertake meaningful consultation with Affected Persons (APs);
- Ensure APs are clearly identified including those with no formal rights;
- Restore their livelihood;
- Pay compensation in time before land is acquired; and
- Disclose all relevant information.

⁷¹ .in terms of land acquisition and resettlement

8.4 Criteria for Eligibility of APs

The criteria for eligibility of potential Affected Person (APs)/Affected Households (AHs) in accordance with the World Bank OP 4.12 are:

- Those who have formal legal rights to land (including customary and traditional rights recognized under the laws of the country);
- Those who do not have formal legal rights to land at the time the paps identification process(census) begins but have a claim to such land or assets--provided that such claims are recognized under the laws of the country or become recognized through a process identified in the resettlement plan; and;
- Those who have no recognizable legal right or claim to the land they are occupying.

All of the above categories of the APs will be eligible for compensation under the ARAPs.

8.5 Compensation Eligibility and Entitlements for Affected Persons

8.5.1. Eligibility Criteria

The project-affected persons, including displaced persons, eligible for compensation or rehabilitation provisions under PRSWSSP are:

- All land owning displaced persons losing land or non-land assets, i.e., crops and trees whether covered by legal title or traditional land rights, whether for temporary or permanent acquisition.
- Tenants and share-croppers, whether registered or not; for all non-land assets, based on prevailing tenancy arrangements.
- Displaced persons losing the use of structures and utilities, including titled and non-titled owners, registered, unregistered, tenants and lease holders plus encroachers and squatters.
- Displaced persons losing business, income and salaries of workers, or a person or business suffering temporary effects, such as disturbance to land, crops, and business operations both permanently and also temporarily during commencement.
- Loss of communal property, lands and public infrastructure.
- Vulnerable APs identified through the Checklist at screening stage.
- The affected persons will be eligible for rehabilitation subsidies and for the compensation of lost land, structures and utilities along with re-establishment of livelihood.
- There will also be special provisions for vulnerable displaced persons i.e. very old, physically or mentally handicapped, poor below the poverty line, widows, and women headed household, and socially isolated.

Market value will determined by the Borad of revenue department

Compensation and rehabilitation entitlements are summarized in the Entitlement Matrix in table below:

Table 33: Entitlement Matrix

Asset	Specification	Affected People	Compensation Entitlements
Arable Land Temporary land use during project commencement	Access is not restricted and existing or	Farmer/ Titleholder Leaseholder (registered or	• Monthly Rent is accordance to the latest market rate; • Compensation, in cash, for all damaged crops and trees as per item below plus 15% • compulsory acquisition surcharge • Monthly Rent is accordance to the latest

	current land use will remain unchanged	<i>not</i> Sharecroppers (<i>registered or not</i>) Agricultural workers Squatters	market rate; • Compensation, in cash, for all damaged crops and trees as per item below • Monthly Rent is accordance to the latest market rate; • Compensation, in cash or kind, for all damaged crops and trees as per item below • Compensation, in cash or kind, for all damaged crops and trees as per item below • Compensation, in cash, for all damaged crops and trees as per item below
Arable Land where access is restricted and/or land use will be affected	All adverse effects on land use independent of severity of impact Additional provisions for severe impacts (More than 10% of land loss)	Farmer/ Titleholder Leaseholder (<i>registered or not</i>) Sharecroppers (<i>registered or not</i>) Agricultural workers losing their contract Squatters Farmer/ Titleholder Leaseholder Sharecroppers (<i>registered or not</i>) Squatters	Land for land compensation with plots of equal value and productivity to the plots lost; or; Cash compensation for affected land at replacement cost based on market value free of taxes, registration, and transfer costs Renewal of lease in other plots of equal value/productivity of plots lost, or Cash equivalent to market value of gross yield of affected land for the remaining lease years (up to a maximum of 3 years). Cash compensation equal to the market value of the lost harvest share once (temporary impact) or twice (permanent impact) Cash indemnity corresponding to their salary (including portions in kind) for the remaining part of the agricultural year. rehabilitation allowance equal to market value of 1 gross harvest (in addition to crop compensation) for land use loss. 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) 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)
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 one harvest (either winter or summer). All other crop losses will be compensated at market rates based on actual losses.
Trees	Trees affected	All APs (including squatters)	Where trees are cut down, the rate for wood and loss of income from tree products e.g. fruit will be provided. Cash compensation shall reflect income replacement
Ruminants/ Livestock Sheds	Sheds affected	All PAPs (including squatters and encroaches)	Cash compensation at replacement cost 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. No compensation for land will be provided if land is not acquired.
Business Employment	Temporary or permanent loss of business or employment	All PAPs including squatters and encroachers	Business owner: (I) Cash compensation equal to one year income, if loss is permanent based on type of business; (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. Temporary workers e.g. Hawkers/street vendors: Opportunity cost compensation equivalent to 2 months net income, or the relocation allowance, whichever is higher. Relocation assistance (costs of shifting) Assistance to obtain alternative site to re-establish the business
Relocation	Transport and transitional livelihood costs	All PAPs affected by relocation	Provision of allowance to cover transport expenses based on the latest transportation rates and livelihood expenses (based on type and nature of livelihood) for one month.
Community assets		Any community structures will be rebuilt at a community-	Rehabilitation/substitution of the affected structures/utilities (i.e. mosques, footbridges, roads, schools, health centers, etc.)

		agreed location	
Vulnerable AP livelihood			Subsistence grants to displace, poor /vulnerable families like (I) female headed households with dependents, (ii) disabled household heads, (iii) households falling under the generally accepted indicator for poverty, and (IV) ethnic minorities and indigenous peoples. Subsistence grants will be equal to official Minimum Wage per month for the fiscal year per earning member in the household. Additionally, those with no earning members will be compensated according to the Official Poverty Line per person per month.
Unforeseen/unanticipated impacts			Any unanticipated consequence of the project will be documented and mitigated based on the spirit of the principles agreed upon in this Policy framework.

8.6 Cut-off Date

The cut-off date shall be set to prevent false claims for compensation or rehabilitation appearing after disclosure of the Resettlement Action Plan. Compensation eligibility for non-land losses will be limited by a cut-off date for each sub-project on the day of the beginning of the census survey for the impact assessment in order to avoid an influx of outsiders or announcement of Section-4. 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.

8.7 Abbreviated Resettlement Action Plan (ARAP)

The RAP preparation activities will be initiated as part of the preparation of each new subproject of Project involving resettlement impacts. The procedures will be to take the land requirements for each proposed sub-project and carry out a measurement survey and enumeration. The Resettlement Specialist (Consultant) will work closely with PIMU/SDU resettlement officer for RPF implementation and follow the procedures as described in ESMF. In this regard, consultant will facilitate the TCs for preparation of ARAP as per RPF of PRSWSSP. TCs will be responsible to acquire map of the land from the Punjab Land Revenue Department and overlay subproject site requirements with clear demarcation of Government and private land, and also carryout demarcation on the ground in the presence of local community representatives and SDUs /RS (Consultant) in a transparent manner to avoid any confusion. The appraisal will entail the following studies and investigations:

- **Socioeconomic Survey:** A socio-economic survey will be carried out to provide a detailed socio-economic profile of the population in the subproject areas. The information gathered will include but not be restricted to the following aspects:
 - Households composition;
 - Demography and ethnicity;

- Health and education;
- Community assets;
- Livelihood patterns and income baseline;
- Land ownership patterns;
- Affected persons income levels and expenditure patterns;
- Affected Persons views on the subproject and various resettlement and rehabilitation options;
- Specific impacts on the poor, women, and other vulnerable groups.

Census Survey: A census of all people/households to be displaced or resettled will be undertaken based on the categorizations in the Entitlement Matrix. The Census will determine the exact number of AHs/APs and how they will be affected by the specific impacts of a subproject. The Census will also identify all severely and vulnerable AHs.

Social Impact 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 the incomes of the APs.

Mitigation of Impacts: The project will endeavor to avoid resettlement by changing the subproject site locations. If unavoidable, a Abbreviated RAP shall be prepared in line with this RPF and World Bank core policies and procedures and LAA (1894) and will cover all resettlement related impacts. The ARAP shall be implemented and monitored by the project proponent (Relevant TC with technical support of PIMU/SDU/consultant) before contractor mobilization or physical works commencement. The entitlement matrix included in the RPF will serve as a basis for the mitigation.

Gender Impacts, Social Inclusion and Mitigation Measures: ARAP will include measures ensuring that the socio-economic needs and priorities of women are identified, addressed, and mitigated. The gender provisions will be incorporated to safeguard the specific needs and problems of women displaced persons during subproject implementation. The socio-economic data gathered will be gender disaggregated. Female staff will be hired to collect data and assist women in resettlement activities. Female household heads will be registered as the recipients of compensation and rehabilitation measures to be extended to their households. Women will be included in the consultation process through meetings held with women and will be encouraged to participate in the ARAP planning and implementation process.

ARAP Preparation: All ARAPs will be based on the provision outlined in this RPF. The ARAPs may need to be updated to take into account changes in the final site locations. If needed, the ARAPs should be updated (i) on finalization of sub-project site location but prior to the mobilization in the field and (ii) during the sub-project operations (imparting training packages) where changes result in changes to the resettlement impacts.

ARAP Approval: Land will not be possessed until all ARAPs are approved by the World Bank, payments made, replacement land found, replacement structures provided, and displaced persons relocated. All ARAPs are subject to final review and approval by the World Bank to ensure compliance with Bank Policies and Procedures. At its sole discretion the World Bank may delegate through the Government to the PIMU/LG&CDD or any other Government entity this responsibility to ensure

compliance with the provisions in this RPF after it is satisfied that effective monitoring of this process is in place. The Outline of ARAP is attached as **Annexure V**.

8.8 Consultation, Participation and Disclosure/ Access to Information

8.8.1.Stakeholder Consultation

At first stage, consultations with potential affected persons and beneficiaries will be carried out including communities, potential affected, District Governments and provincial line departments, and further consultations will be carried out particularly with APs and other key stakeholders during preparation and implementation of ARAPs mentioned in this RPF. The timing and nature of these consultations will vary depending upon the implementation Project. Stakeholders will be identified through the initial social impact assessment for subprojects.

Table below describes the proposed consultation framework for RPF at different phases of sub-projects.

Table 34: Consultation Framework for RPF

RPF Stages	Stakeholders	Consultation Tools	Responsibility
Subprojects Design	Institutional Stakeholders: relevant provincial and local government departments, academia, bonafide development agencies, NGOs and subject experts in relevant area of subproject	Scoping Meeting with Institutional Stakeholders to deliberate on the planned project interventions and potential risks regarding land acquisition and resettlement	Resettlement Specialist (CONSULTANT)
	Selected Local Communities, notables and from Low-Income backgrounds (including women)	Focus Group Discussions with Community Representatives on potential risks regarding land acquisition and resettlement	Resettlement Specialist (consultant)
Subproject Inception (determining compensation entitlements, eligibility criteria)	Institutional Stakeholders: Commissioner Office of relevant sub-project-area, Punjab Land Revenue Department, Land Acquisition Collector	Scoping Meetings at PIMU level and relevant TC level	Resettlement Specialist (CONSULTANT)
	Affected Persons	- Focus Group Discussions and informed consultation meetings - Provision of information dissemination brochures	Resettlement Specialist (consultant)
Subproject implementation (land and asset acquisition process, income restoration measures and delivery of compensation)	Affected Persons	- Focus Group Discussions and informed consultation meetings - Provision of information dissemination brochures	Resettlement Specialist (Consultant)
	Institutional Stakeholders including implementation partners: Commissioner Office, Revenue department of GoPunjab, Patwari, Land Acquisition Collector	Scoping Meetings at PIMU level and relevant TC level	Resettlement Specialist (consultant)

8.8.2. Disclosure of Information Plan

The executive summary of this RPF, after its clearance from the World Bank, as well as sub-project ARAPs will be translated into Urdu and disclosed to the public through websites of the LG&CDD and relevant MC, the World Bank and shared with institutional stakeholders, APs and beneficiary communities.

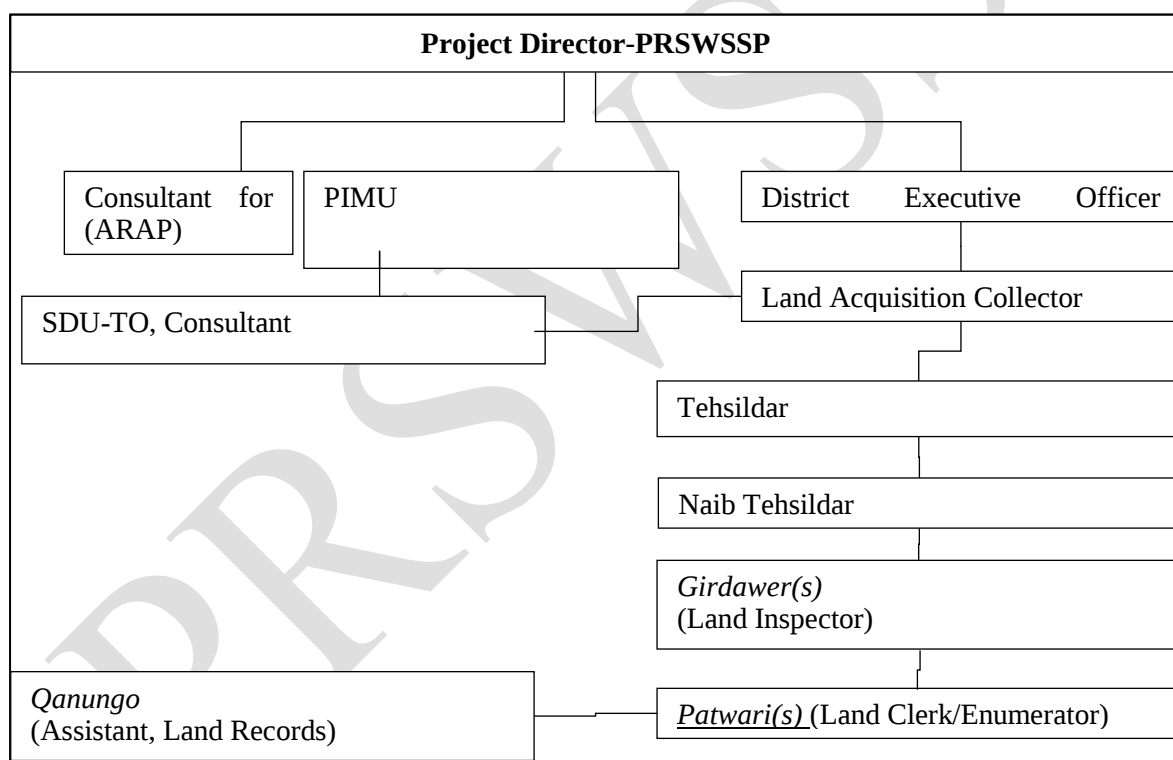
Before the socio-economic baseline surveys are mobilized, relevant sub-project TC needs to have developed a workable strategy for public consultation and information disclosure, CONSULTANT will take lead in assuming this responsibility to facilitate the TCs. During the census surveys, each Affected Household will be directly informed about the subproject entitlements and procedures.

The consultation process will need to outline the legal procedures that are to be followed for land acquisition and relocation. The details of the process will have to be clearly communicated to any displaced/APs and in a form that can be easily understood. The information given should also include the provisions of the WB policies & procedures and outline the rights and obligations of APs.

8.8.3. Institutional Arrangements and Implementation Mechanism

The PD–PRSWSSP will have the overall responsibility for implementation of all resettlement tasks and to facilitate the TC. The Resettlement officer under PD-PRSWSSP will oversee and direct all the activities during the implementation of ARAPs SDU/consultant at the Tehsil level will be responsible for implementing the ARAPs according to the agreed procedures.

The Executive District Officer of Revenue Department, along with his staff, will be responsible for the acquisition of private land under Land Acquisition Act 1894 of Pakistan. The SDUs and Consultant will be responsible for coordination with the Revenue Department.



▪ **Figure 15: Institutional Arrangements for Implementation of ARAP/RAP**

▪ **Table 35: Land Acquisition and Resettlement (LAR) Process**

Step	Action	Responsibility	Monitoring
1	Initial screening indicating for a specific subproject whether LAR is needed.	SDU-TOs	PIMU
2	Proposal to Revenue Department with brief description of sub-project including LAR.	Relevant TC with the technical assistance of SDU/Consultant	PIMU
3	Prepare impacts/APs surveys forms and establish coordination with relevant local government agencies.	Consultant	LG&CDD or may be deputed an independent monitor
4	Verify land records in affected areas, conduct survey and carry out impacts and valuation surveys, identify land classification for affected areas	Land Acquisition Collector (LAC), Patwari, SDU	
5	Conduct public consultations and negotiations	SDU-TO, Consultant	
6	Preparation and Finalization of subproject ARAPs	Consultant	
7	ARAPs disclosure to APs	Consultant, PIMU	
8	Compensation Disbursement	PIMU	
9	Relocation	PIMU	

8.8.4. Resettlement Budget and Financing

All ESMPs/SMPs/RAPs preparation and implementation costs, including cost of compensation, various eligible allowances, monitoring, evaluation, grievances redress, as well as contingencies, will be estimated and included as an integral part of each sub-project cost. ARAPs of each subproject will include a budget section indicating (i) unit compensation rates for all affected items and allowances, (ii) methodology followed for the computation of unit compensation rates, and (iii) a cost table for all compensation expenses including administrative costs and contingencies.

Financing for each subproject specific ARAP cost, including compensation, allowances, and administration of ARAP preparation and implementation, will be provided by the Government of Punjab. Costs for external monitoring tasks can be allocated under the Project. In order to ensure that sufficient funds are available for ARAPs tasks, the Local Governments will have to allocate 100% of the cost of compensation at replacement cost and expected allowances estimated in each ARAPs plus 10% of contingencies before ARAPs implementation.

Allocations will be reviewed twice a year based on the budget requirements indicated in ARAPs. Regarding the flow of ARAPs finances, it is noted that the budget for land, crops, trees, structures compensation will be disbursed by Punjab Land Revenue Department. TC will be responsible to disburse other entitlements to the APs with assistance from the PIMU. A timetable will be set within ARAPs and the compensation will be done before award of contract, commencement of the physical works or acquiring the land.

8.9 Monitoring and Reporting

ARAPs tasks under each subproject will be subjected to both internal and external monitoring. Internal monitoring will be conducted by the PIMU assisted by the SDU and Consultant. External monitoring will be assigned to TPA firm.

8.9.1. Internal Monitoring

Internal monitoring will be carried out routinely by the SDU and Consultant at the TC level under the supervision of PIMU and their results will be communicated to World Bank through the bi-annual and annual Project implementation reports. The monthly reports will be quarterly consolidated in the standard supervision reports to World Bank. Specific monitoring benchmarks will be:

- Information campaign and consultation with APs;
- Status of land acquisition and payments on land compensation;
- Compensation for affected structures and other assets;
- Payments for loss of income;
- Selection and distribution of replacement land areas;
- Income restoration activities;
- People's views and feedback on ARAP implementation process; and
- Other relevant aspects.

8.9.2. External Monitoring

External monitoring will be carried out twice a year, and its results will be communicated to all concerned APs, PIMU and World Bank through semi-annual reports. Subprojects whose implementation timeframe will be under 6 months will be monitored only once. Indicators for External Monitoring tasks include:

- Review and verify internal monitoring reports prepared by consultant.
- Review of the socio-economic baseline census information of pre-displaced persons;
- Identification and selection of impact indicators;
- Impact assessment through formal and informal surveys with the affected persons;
- Consultation with APs, 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.

The TPM firm will also assess the status of subproject affected vulnerable groups such as female-headed households, disabled/elderly, and families below the poverty line. The TPM firm will carry out a post-implementation evaluation of the ARAPs after completion of its implementation. The compelling reason for this study is to find out if the objectives of the ARAPs have been attained or not. The benchmark data of socioeconomic survey of severely affected APs conducted during the preparation of the ARAPs will be used to compare the pre and post project conditions. The TPM firm will recommend appropriate supplemental assistance for the APs if the outcome of the study may show that the objectives of the ARAPs have not been attained.

Annexures

Annexure A: Water Assessment Tehsil Wise (8 Out Of 16)

Tehsil	Water Assessment
Tehsil Mianwali	There are 04 mauza in tehsil Mianwali i.e. Kund, Dhoke Noor Shah, Shah Gul Muhammad wali and Chak 28-DB. In the light of 03 pumping tests, 18 ERS and 03 trial bore-holes, following conclusions have been drawn; Groundwater quality of shallow aquifer is fresh (less than 500ppm) in the entire area. Top Soils consisting fine sand with clay layers. Dominant course to medium grade sand vertically extends below an average 20m depth to 100m. Interface between fresh to marginal quality water is not encountered within 100m depth. A tube-well (well inventory Sr. # 12) already installed at 61m depth pumping 250PPM water @ 140m³/hr discharge, confirming the adequate vertical and lateral extent of fresh water aquifer. The aquifer conditions of the area are suitable for installation of 1.0 cusec capacity tube-well at 80m (200ft) depth in which pumping tests, ERS and trial bore-holes were done
Tehsil Khushab	Link Canal pumping fresh water quality water @225 gpm for domestic use of 19-MB settlement. These conditions are suitable for installation of 1.0 cusec capacity tube-well at 30m depth near ERS-1 location. In view of the concluded results of the present study the location near CJ Link canal may be considered for development of well field At this location, fresh water aquifer extends vertically at an average depth of 90m near canal and 25m at an average distance of 250m longitudinally away from canal. Brackish quality of aquifer is underlying fresh quality aquifer. The average depth of interface, between fresh quality aquifer to brackish quality aquifer, 90m near canal and 25m at a lateral distance of 250m away from canal. The ERS results shows that there is minor variation of interface depth between the two longitudinal lines, located 230m apart. There is no remarkable difference in results between Pre and Post Monsoon survey. This may be due to short interval between the two data acquisition periods. A water supply well already installed at CJ Link Canal pumping fresh water quality water @225gpm for domestic use of 19-MB settlement. In view of the fact the location near CJ Link Canal may be considered for development of well field.
Tehsil Darya Khan	The district Bhakkar falls in the sweet zone area and the tests of pumping, ERS, trial bore-holes, that ground water is equally good and the Indus river water can be utilized for the installation of tube-wells. The results of ERS-4 are consistent with ERS-1 and following conclusions have been drawn; Mauza Lak Kalan is located in abandoned flood plain of River Indus. Sustainable supply of fresh water is possible as the area is being continuously recharged by River Indus. Groundwater quality of shallow aquifer is fresh up to 100m depth of investigation. Pumping test of tube-well (well inventory point # 2) drilled at 36m depth, pumping 125m³/hr, producing 392ppm water with maximum 3m draw down confirming adequate groundwater potential with better water quality available in the area. The interface between fresh to marginal aquifer has not encountered up to 100m depth of investigation. The fresh quality aquifer (less than 1000ppm) is interpreted to be delineated vertically up to the depth of investigation. i.e. 100m. The resistivity values of ERS -1, repeated at ERS-4 location after monsoon, are consistent, showing no major difference in water quality and quantity in pre-monsoon and post-monsoon. The interface between fresh to marginal aquifer has not encountered up to 100m depth of investigation.

	Subsoil comprising dominant course sand indicating permeable aquifer prevailing in the area. These conditions are suitable for installation of 1.0 cusec capacity tube-well at 80m depth
Tehsil Lodhran	Groundwater in the Kotli Jhandir is distributed into fresh and marginal quality. The interpreted results of both ERS soundings confirming the presence of fresh water up to the depth of exploration, i.e. 100m. The interface between fresh water quality and marginal / brackish water quality is also not encountered within 100m depth. Well inventory point, Sr # 03 (tube-well. 107m deep, installed for irrigation) pumping 100m³/hr producing 760ppm water, confirming the adequate water potential with best water quality at this location. In view of the concluded results of the present study the location near Ahir Minor at ERS -1 may be considered for development of well field. Vertical and lateral penetration of seepage water from the canal is shown by presenting the columnar view of six (06) ERS probes, conducted along two longitudinal lines at Mahmud distributary. The seepage of Mahmud Distributary is spread vertically 100m deep near the canal and 30m deep at longitudinal distance of 350m away from canal. The aquifer is composed of dominant fine to medium sand with few clay layers. In view of the fact the location near Mahmud Distributary may be considered for development 3.5 of well field for fresh water supply to Mauza Galandra.
Tehsil Khairpur Tamewali,	In the light of activities performed for groundwater investigations of four (04) pre-selected Mauza of tehsil Khairpur tamewali for pumping test, ERS and trial bore-holes, the conclusions drawn for water sources, as under: Regional condition of groundwater is generally marginal. However seepage have improved the water quality of shallow aquifer, in a limited extent, in the vicinity areas of Sidhnai Mailsi Link Canal and Sadiq Wah Minor. Sustainable yield of fresh water can be obtained only from the aquifers which are regularly recharged. Sadiq Wah Minor is concrete lined producing limited seepage. Sidhnai Mailsi Link Canal is big water body carrying 6000 cusec water producing sufficient seepage through sandy aquifer. Fresh quality aquifer is interpreted to be delineated at an average depth of 80m near canal and 40m at a lateral distance of 210m from canal bank. Hydraulic parameters of aquifer(s) and study of aquifer behavior at desire pumping are pre-requisite. for determination of the volume of fresh quality water and spacing between the tube-wells.
Tehsil Liaquatpur	The activities performed for groundwater investigations (pumping tests, ERS and trial bore-holes) of following four (04) selected mauza / villages of tehsil Liaquatpur, district Rahim Yar Khan. The findings are: Mauza Hayat Machi is located in abandoned flood plain of River Indus, where fresh quality of groundwater extends beyond 100m depth. Pumping test of a tube-well installed at 37m depth, pumping 100m³/hr, producing 280ppm water with maximum 3m draw down confirming the adequate groundwater potential with better water quality available in the area. Subsoil, consisting dominant course to medium sand, comprising permeable aquifer. These conditions are suitable for installation of 1.0 cusec capacity tube-well at 80m depth. 3-R distributary is a lined canal, passing 3.6km from the settlement. Some hand pumps exist near the distributary, mostly installed at 15m depth. Water quality of these wells is mostly marginal, except one pumping fresh water. The results of ERS survey, performed at 3-R distributary, indicated that in spite of lined canal, the canal seepage has penetrated vertically 40m depth near the bank and 20m depth at 100m longitudinal distance from the bank. This shows that a seepage is available at limited vertical and lateral extent from 3-R distributary. The volume of seepage water was not possible to be worked out as no water well exist near the canal.

	In view of the results of present study following solutions have been envisaged for the development of well field in the subject area.
Tehsil and district Bahawalnagar	The activities performed for groundwater investigations (pumping tests, ERS and trial bore-holes) of following four (04) selected mauza / villages of tehsil and district Bahawalnagar. The findings are: Groundwater in Chaweka Hatar is distributed into fresh and marginal quality. The interpreted results of ERS-1 showing depth of interface between fresh to marginal water delineating at 60m depth, attributed to limited seepage producing by Dhudi minor in the vicinity areas. At ERS-2 location fresh water is interpreted to be extended below 100m depth. Water quality of well inventory points 2, 3 and 4, located in the vicinity of ERS-2 location, supporting the interpreted results of ERS-2 probe. Well inventory point, Sr # 02 (tube-well. 61m deep, installed for irrigation) pumping 125m³/hr producing 7145ppm water, confirming the adequate water potential with best water quality at this location In view of the concluded results of the present study the proposed location at ERS 2 may be considered for development of well field. Groundwater quality of shallow aquifer in the settlements of Mauza Bahadurka Sharki is marginal to brackish. Fordwah canal passing almost 7kilometer from the settlements. The results of ERS survey showing that the seepage has spread, vertically 100m depth and laterally 200m longitudinal distance from the canal, from Fordwah Canal in the survey area. In view of the concluded results of the present study the location near Fordwah canal may be considered for development of well field.
Tehsil and district Pakpattan	The activities performed for groundwater investigations (pumping tests, ERS and trial bore-holes) of following four (04) selected mauza / villages of tehsil and district Pakpattan. The findings are: Groundwater in the Mauza 12-Sp is distributed into fresh to marginally fresh quality. The quality of the wells installed in the area are pumping fresh water. A tube-well installed at 91m was tested for pumping capacity. Pumping @ 88m³/hr, the drawdown was 5.5m with 357ppm water quality attributed to good water potentials with best water quality. The interpreted results of both ERS soundings confirming the presence of fresh water up to the 100m, i.e. depth of exploration. The interface between fresh water quality and marginal / brackish water quality is also not encountered within 100m depth. In view of the concluded results of the present study the location near Sohag Para Minor may be considered for development of well field. Groundwater in the Mauza Mari Amb is distributed into fresh to marginally fresh quality. The wells installed in the area are pumping fresh quality of water. The draw down against 6hr continuous pumping @ 100m³/hr was 3m. This indicate that the groundwater potential of the area is good. Groundwater quality during pumping test was recorded as 385ppm, confirming fresh water quality prevailing in the testing area. The interpreted results of both ERS soundings confirming the presence of fresh water up to the 100m, i.e., depth of exploration. The interface between fresh water quality and marginal / brackish water quality is also not encountered within 100m depth. In view of the concluded results of the present study the location near Mari Amb Minor at ERS -1 may be considered for development of well field.

Source: Mot McDonald Study

Annexure B: Canal System in Project Area							
Sr. No.	District	Tehsil	Mauza name	Distance to nearest canal	Channel name of nearest canal (km)	Canal type	Flow type
1.	Mianwali	Mianwali	Chak no 028+d.b.	0	3-I Disty	D	Perennial
2.			Shah Gul Mohd Wali	3.1	Thal Canal Main Line Upper	MC	Perennial
3.			Kund	18.8	2-I Lift Disty	D	Perennial
4.			Dhok Noor Shah	19.5	Daudkhel Disty	D	Perennial
5.	Khushab	Noorpur thal	Adhi Sargal	0	Adhi Kot Disty	D	Perennial
6.			52/D.B.	0	Tail Left Minor	M	Perennial
7.			19/M.B.	11.2	Amir Kot Minor	M	Perennial
8.	Bhakkar	Darya khan	Daggar Qureshi Darmiani	0	Thal Canal Main Line Lower	MC	Perennial
9.			Lak Kalan	3	Darya Minor	M	Perennial
10.			Majoka	8.1	Hukam Disty	D	Perennial
11.	Lodhran	Lodhran	Kotli Jhandeer	2.4	1R/2I/TD sub minor	SM	Perennial
12.			Galandrah	3.2	1R/2I/TD sub minor	SM	Perennial
13.			Kalu Wala	16.8	2I/TD minor	M	Perennial
14.			Shahnal	16.9	2I/TD Minor	M	Perennial
15.	Bahawalpur	Khairpur tamewali	Khair Pur Jadeed	3.3	Lower Bahawal Canal	MC	Perennial
16.			Bheli	7.9	Lower Bahawal Canal	MC	Perennial
17.			Khanan Araian	17.4	Lower Bahawal Canal	MC	Perennial
18.			Rameli	20.4	Lower Bahawal Canal	MC	Perennial
19.	Rahim yar khan	Liaqatpur	21/abs	0	2-R/AC Disty	D	Perennial
20.			Bahar Khhakhi	4.5	Sharif Disty	D	Perennial
21.			Hayat Machhi	12	Abbassia Canal	MC	Perennial

22.			Bet Murad	14.1	Sharif Disty	D	Perennial
23.	Bahawalnagar	Bahawalnagar	Mina Sanatteka	0	Malik Branch	BC	Perennial
24.			Tekuram Pura	0.8	Hakra Branch	BC	Perennial
25.			Chaweka Hatar	13.2	1R/Jalwala Minor	D	Perennial
26.			Bahadurka Sharki	15.3	Jalwala Disty	D	Perennial
27.	Pakpattan	Pakpattan	Farid Kot	0	Pakpattan Canal Upper	MC	Perennial
28.			12/SP	2.2	Pakpattan Canal Upper	MC	Perennial
29.			Mari AMB	15	Jalwala Disty	D	Perennial
30.			Bhela Kalaran	19.1	Pakpattan Canal Upper	MC	Perennial

Annexure C:Result of Waste Water Tests in 8 Tehsils of Punjab					
S.No	Tehsil & District	Mauza/Village	BOD	COD	Quality of waste water
			80 ppm (NEQs/WHO)	150 ppm (NEQs/WHO)	
1.	Tehsil Mianwali, District Mianwali	Dhok Noor Shah	65	140	Unsafe
2.	Tehsil Mianwali, District Mianwali	Dhok Noor Shah	85	170	Unsafe
3.	Tehsil Mianwali, District Mianwali	Kund	115	250	Unsafe
4.	Tehsil Mianwali, District Mianwali	Kund	105	230	Unsafe
5.	Tehsil Mianwali, District Mianwali	Shah Gul Muhammad Wali	90	210	Unsafe
6.	Tehsil Mianwali, District Mianwali	Shah Gul Muhammad Wali	75	190	Unsafe
7.	Tehsil Noorpur Thal, District Khushab	Chak No. 19 MB	60	145	safe
8.	Tehsil Noorpur Thal, District Khushab	Chak No. 19 MB	75	180	unsafe
9.	Tehsil Darya Khan, District Bhakkar	Lak Kalan	90	210	unsafe
10.	Tehsil Darya Khan, District Bhakkar	Lak Kalan	65	170	unsafe
11.	Tehsil Darya Khan, District Bhakkar	Majoka	65	130	unsafe
12.	Tehsil Darya Khan, District Bhakkar	Majoka	75	160	unsafe
13.	Tehsil Darya Khan, District Bhakkar	Daggar Qureshi	120	250	unsafe
14.	Tehsil Darya Khan, District Bhakkar	Daggar Qureshi	125	280	unsafe
15.	Tehsil Lodhran, District Lodhran	Kotli Jhandeer	100	210	unsafe
16.	Tehsil Lodhran, District Lodhran	Kotli Jhandeer	135	280	unsafe
17.	Tehsil Lodhran, District Lodhran	Galandrah	130	160	unsafe
18.	Tehsil Lodhran, District Lodhran	Galandrah	140	290	unsafe
19.	Tehsil Lodhran, District Lodhran	Kalu Wala	135	270	unsafe
20.	Tehsil Lodhran, District Lodhran	Kalu Wala	130	160	unsafe

21.	Tehsil Lodhran, District Lodhran	Shahnal	140	310	unsafe
22.	Tehsil Lodhran, District Lodhran	Shahnal	85	190	unsafe
23.	Tehsil Khairpur Tamewali, district Bahawalpur	Khaipur Jadeed	110	220	unsafe
24.	Tehsil Khairpur Tamewali, district Bahawalpur	Khaipur Jadeed	180	380	unsafe
25.	Tehsil Khairpur Tamewali, district Bahawalpur	Bheli	165	340	unsafe
26.	Tehsil Khairpur Tamewali, district Bahawalpur	Bheli	140	280	unsafe
27.	Tehsil Khairpur Tamewali, district Bahawalpur	Khanan Araian	130	270	unsafe
28.	Tehsil Khairpur Tamewali, district Bahawalpur	Khanan Araian	120	140	unsafe
29.	Tehsil Khairpur Tamewali, district Bahawalpur	Rameli	160	320	unsafe
30.	Tehsil Khairpur Tamewali, district Bahawalpur	Rameli	125	260	unsafe
31.	Tehsil Liaqatpur, district Rahim Yar Khan	Chak No. 21 ABS	140	290	unsafe
32.	Tehsil Liaqatpur, district Rahim Yar Khan	Chak No. 21 ABS	85	180	unsafe
33.	Tehsil Liaqatpur, district Rahim Yar Khan	Bahar Khakhi	128	250	unsafe
34.	Tehsil Liaqatpur, district Rahim Yar Khan	Bahar Khakhi	95	200	unsafe
35.	Tehsil Liaqatpur, district Rahim Yar Khan	Hayat Machi	80	170	unsafe
36.	Tehsil Liaqatpur, district Rahim Yar Khan	Hayat Machi	85	190	unsafe
37.	Tehsil Liaqatpur, district Rahim Yar Khan	Bet Murad	160	340	unsafe
38.	Tehsil Liaqatpur, district Rahim Yar Khan	Bet Murad	130	270	unsafe
39.	Tehsil Pakpattan, district Pakpattan	Farid Kot	180	370	unsafe
40.	Tehsil Pakpattan, district Pakpattan	Farid Kot	160	320	unsafe
41.	Tehsil Pakpattan, district Pakpattan	Chak No. 12 SP	140	290	unsafe
42.	Tehsil Pakpattan, district Pakpattan	Chak No. 12 SP	160	330	unsafe
43.	Tehsil Pakpattan, district Pakpattan	Mari AMB	120	250	unsafe
44.	Tehsil Pakpattan, district Pakpattan	Mari AMB	140	280	unsafe

45.	Tehsil Pakpattan, district Pakpattan	Hela Kalaran	115	240	unsafe
46.	Tehsil Pakpattan, district Pakpattan	Hela Kalaran	140	290	unsafe
47.	Tehsil Bahawalnagar, district Bahawalnagar	Mina Sanatteka	160	340	unsafe
48.	Tehsil Bahawalnagar, district Bahawalnagar	Mina Sanatteka	150	310	unsafe
49.	Tehsil Bahawalnagar, district Bahawalnagar	Tekuram Pura	140	190	unsafe
50.	Tehsil Bahawalnagar, district Bahawalnagar	Tekuram Pura	130	160	unsafe
51.	Tehsil Bahawalnagar, district Bahawalnagar	Chaweka Hatar	170	350	unsafe
52.	Tehsil Bahawalnagar, district Bahawalnagar	Chaweka Hatar	160	320	unsafe
53.	Tehsil Bahawalnagar, district Bahawalnagar	Bahadurka Sharki	85	180	unsafe
54.	Tehsil Bahawalnagar, district Bahawalnagar	Bahadurka Sharki	110	220	unsafe
Average Value			120	240	

Annexure D: Flora & Fauna

Tehsil	Flora	Fauna
Darya Khan, Bhakkar	<i>Prosopis spicigera</i> , <i>Tamarix aphylla</i> , <i>Capparis decidua</i> <i>Salvadora oleoides</i> <i>Chenopodium</i> (<i>Prosopis spicigera</i>), <i>karir</i> (<i>Capparis aphylla</i>), <i>beri</i> (<i>Zizyphus jujuba</i>), <i>van</i> (<i>Salvadora oleoides</i>), <i>kikar</i> (<i>Acacia nilotica</i>), <i>shisham</i> (<i>Dalbergia sissoo</i>) <i>aak</i> (<i>Calotropis spp</i>).	<i>Jungle Cat</i> (<i>Felis chaus</i>), <i>Wild Pig</i> (<i>Sus scrofa</i>), <i>Desert Wolf</i> (<i>Canis lupus pallipes</i>), <i>Common Grey Mongoose</i> (<i>Herpestes edwardsi</i>), <i>Long-eared Hedgehog</i> (<i>Hemiechinus collaris</i>), <i>Desert Jird</i> (<i>Meriones hurrianae</i>), <i>Yellowbellied Scotophil Bat</i> (<i>Scotophilus heathii</i>), <i>Kuhl's Pipistrelle</i> (<i>Pipistrellus kuhlii</i>).
Khairpur Tamewali (Bahawalpur) Liaquatpur (Rahim Yar Khan) Bahawalnagar	<i>Calligonum polygonoides</i> , <i>Alhagi camelorum</i> , \ <i>Acacia jacquemontii</i> , <i>Prosopis spicigera</i> , <i>Pennisetum dichotomum</i> , <i>Leptadenia spartium</i> , <i>Capparis decidua</i> , <i>Haloxylon polygonoides</i> , <i>Dalbergia sissoo</i> , <i>Acacia nilotica</i> <i>Eucalyptus camaldulensis</i> <i>Prosopis glandulosa</i> <i>Saccharum bengalense</i> <i>Imperata cylindrical</i> <i>Conyza ambigua</i> <i>Aeluropus lagopoides</i> , <i>Cymbopogon jwarancusa</i> <i>Ochthochloa compressa</i> , <i>Tamarix dioica</i> , <i>Cymbopogon jwarancusa</i> <i>Saccharum bengalense</i> <i>Nelumbo nucifera</i>	<i>Desert Fox</i> (<i>Vulpes vulpes pusilla</i>), <i>Small Indian Civet</i> (<i>Viverricula indica</i>), <i>Caracal Cat</i> (<i>Felis caracal</i>), <i>Hairy-footed Gerbil</i> (<i>Gerbillus gleadowi</i>), <i>Cheesman's Gerbil</i> (<i>Gerbillus cheesmani</i>), <i>Common Indian Gerbil</i> (<i>Tatera indica</i>), <i>Chinkara</i> (<i>Gazella bennettii</i>), <i>Kutch Sheath-tailed Bat</i> (<i>Taphozous nudiventris</i>). <i>Desert Hare</i> (<i>Lepus nigricollis dayanus</i> <i>waterfowl</i> , <i>grey and black francolins</i> , <i>houbara bustard</i> <i>Sand grouses</i> .
Ahmedpur Jhang	<i>Saccharum spontaneum</i> , <i>Phragmites communis</i> , <i>Tamarix dioica</i> , <i>Typha elephantina</i> , <i>Typha angustata</i> , <i>Arundo donax</i> , <i>Paspalum ditichum</i> , <i>Erianthus spp</i>	<i>Wild Pig</i> (<i>Sus scrofa</i>), <i>Hog Deer</i> (<i>Axis porcinus</i>). <i>Smooth-coated Indian Otter</i> (<i>Lutrogale perspicillata</i>). <i>Fishing Cat</i> (<i>Prionailurus viverrinus</i>), <i>Yellow-bellied Scotophil Bat</i> (<i>Scotophilus heathii</i>).
Bhowana, Chiniot	<i>Jand trees</i> (<i>Prosopis spicigera</i>), <i>Karir</i> (<i>Capparis aphylla</i>), <i>Beri</i> (<i>Zizyphus jujuba</i>), <i>Van</i> (<i>Salvadora oleoides</i>), <i>Kikar</i> (<i>Acacia arbica</i>), <i>Shisham</i> (<i>Dalbergia</i>) <i>Aak</i> (<i>Calotropis hamiltonii</i>)	

Taunsa, DG Khan	<i>Jand,</i> <i>frash,</i> <i>Kikar</i> <i>Shisham</i> <i>Sirin a</i>	<i>Pig</i> <i>hog deer.</i> <i>Hares</i> <i>Black</i> <i>gray partridges of</i> <i>duck</i> <i>teal</i>
Karor Pacca, Lodhran		<i>jackals,</i> <i>wild cats,</i> <i>Wild rabbits.</i> <i>Partridges</i> <i>teal,</i> <i>quail, and crane visit the district in</i> <i>winter.</i>
Muzaffargarh	<i>Kikar (Acacia Arabica)</i> <i>Shisham/Tahli (Delbergia sissoo), Beri (Zizyphus</i> <i>jujube),</i> <i>Toot (Morus alba),</i> <i>Sharin (Albizzia lebbek),</i> <i>Dherek (Melia azedarach),</i> <i>Phulai (Acacia modesta),</i> <i>Pipal (Ficus religiosa)</i> <i>Bohr (Ficus bengalensis)</i> <i>Jand (Prosopis spicigera),</i> <i>Karir (Capparis aphylla),</i> <i>Wan (Salvadora oleoides) Rero (Acacia</i> <i>leucophloea)</i> <i>Farash (Tamarix articulata) Pilchhi (Tamarix</i> <i>dioica)</i>	<i>jackals,</i> <i>dogs</i> <i>snakes</i> <i>Birds:</i> <i>sparrows,</i> <i>crows,</i> <i>pigeon,</i> <i>dove tiliar (starling),</i> <i>lal mena,</i> <i>parrot,</i> <i>quail,</i> <i>pintail,</i> <i>humming bird etc.</i> <i>hog deer,</i> <i>ravine deer,</i> <i>black buck</i> <i>blue bull.</i> <i>Fox,</i> <i>jackals,</i> <i>hares,</i> <i>wild boars,</i> <i>porcupines,</i> <i>mongoose,</i> <i>arks,</i> <i>owls</i> <i>hawks</i>
Noorpul Thall-Khushab	<i>Jand (Prosopis cineraria),</i> <i>Wan (Salvadora oleoides),</i> <i>Karir (Capparis aphylla),</i> <i>Farash (Tamarix aphylla),</i> <i>Ber (Zizyphus mauritiana), bushes and shrubs like</i> <i>Phog (Caligonum polygonoides),</i> <i>Ak (Calotropis procera),</i>	<i>Porcupine</i> <i>Mongoose</i> <i>Jungle Cat</i> <i>Bennetts gazelle</i> <i>Red Fox</i> <i>Jackal</i> <i>Asian Houbara bustard</i> <i>Laggar falcon</i> <i>Black partridge</i> <i>Grey partridge</i>
Kot Momin-Mianwali	<i>van(salvadoraabeoides),</i> <i>Kari (salsolafostids),</i> <i>Jand (Prosopisspicigera)</i> <i>malla (Zigyplusnummularia),</i> <i>Kikar (Acacia arabica)</i> <i>Tahli(Dalbergiasisoo)</i>	<i>Jackals</i> <i>Wolf</i> <i>Wild boar</i> <i>Foxes</i> <i>wild cats</i> <i>Chikor</i>

		shirin or sirin (<i>Albizialebbek</i>) ksh or kash or Fareash (<i>Tamarix articulate</i>) The Bee (<i>Zizyphus jujube</i>) sohanjna (<i>Moringsptergosperma</i>) the Lasura (<i>Cordiamyxe</i>)	Sissi lesser bustard (<i>Otistetrax</i>) Quail
Kallar Chakwal	Kahar-	<i>Ziziphus mauritiana</i> , <i>Morus nigra</i> <i>Eucalyptus citriodora</i> . <i>Khabbal</i> (<i>Cynodon dactylon</i>) <i>Conyza bonariensis</i> <i>Brachiaria ramosa</i> <i>Cannabis sativa</i> , <i>Parthenium hysterophorus</i> , <i>Malvastrum</i> <i>coromandelianum</i> , <i>Datura innoxia</i> , <i>Oxalis corniculata</i> , <i>Amaranthus viridis</i> <i>Aerva javanica</i> <i>Chrysopogon serrulatus</i> , <i>Apluda mutica</i> <i>Heteropogon contortus</i> <i>Justicia adhatoda</i> , <i>Dodonaea viscosa</i> , <i>Asparagus gracilis</i> , <i>Opuntia dillenii</i> ,	<i>Punjab Urial</i> (<i>Ovis vignei punjabiensis</i>), <i>Asiatic Jackal</i> (<i>Canis aureus</i>) <i>Cape hare</i> (<i>Lepus capensis</i>). <i>Chinkara</i> or <i>Indian Gazelle</i> (<i>Gazella bennettii</i>), <i>Red Fox</i> (<i>Vulpes vulpes</i>), <i>Indian or Bengal Fox</i> (<i>Vulpes bengalensis</i>), <i>Yellow-throated Marten</i> (<i>Martes flavigula</i>) <i>wild boar</i> (<i>Sus scrofa</i>) <i>Long-eared hedgehog</i> <i>Indian Hare</i> <i>Common Yellow-bellied Bat</i>
Pakpattan		<i>Shesham</i> (<i>Dalbergia sisso</i>) <i>Kikar</i> (<i>Acacia nilotica</i>) <i>Pipal</i> (<i>Ficus religiosa</i>) <i>Jaman</i> (<i>Eugenia Jambolana</i>) <i>Frash</i> (<i>Tamarix aphylla</i>) <i>Beri</i> (<i>Zizyphus jujuba</i>) <i>Mango tree</i> (<i>Mangifera indica</i>)	<i>Mongoose</i> <i>Herpestes anropunctatous</i> <i>Porcupine</i> (<i>Hystrise indica</i>) <i>Hedge Hog</i> (<i>Hemiechinus spp.</i>). <i>Fox</i> (<i>Valpes bengalensis</i>) <i>Jackal</i> (<i>Canis aureus</i>) <i>Wild Boar</i> <i>Indian flagship turtle</i> <i>Brown river turtle</i>

Annexure E: Demographics of selected project tehsils according to 2017 Census

Sr No	Punjab	District	Tehsil	Population 2017	No. of Household	Total no. of villages
1	North	Khushab	Noorpur Thal	243,295	41,428	455
2	North	Mian Wali	Isa Khel	375,026	54,645	436
3	North	Sargodha	Kot Momin	453,562	70,561	832
4	North	Chakwal	Kallar Kahar	169,660	31,082	455
5	Centre	Bhakkar	Darya Khan	360,807	60,857	196
6	Centre	Pakpattan	Pakpattan	969,225	160,307	573
7	Centre	Chiniot	Bhowana	374,270	59,169	-
8	Centre	Jhang	Ahmadpur Sial	433,517	64,439	722
9	South	Rajanpur	Rojhan	405,774	56,891	532
10	South	Rahim Yar Khan	Liaquatpur	1,035,509	148,639	150
11	South	DG Khan	Taunsa	675,756	93,034	826
12	South	Lodhran	Karor Pacca	500,939	80,063	436
13	South	Bahawalpur	Khairpur Tamewali	262,628	42,826	714
14	South	Muzaffargarh	Alipur	639,748	93,110	984
15	South	Bahawalnagar	Bahawalnagar	815,143	133,106	1098
16	South	Multan	Shuja Abad	609,631	95,361	534

Annexure F: Education Data (Schools & Colleges)										
Number of Schools										
Sr No	District	Primary Schools			Middle Schools			High School		
		Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
1	Khushab	729	481	248	136	77	59	117	71	46
2	Mian Wali	964	425	539	163	98	65	125	81	44
3	Sargodha	4030	1742	1616	379	165	214	280	133	147
4	Chakwal	730	376	354	208	88	120	227	115	112
5	Bhakkar	1035	563	472	191	98	93	114	71	43
6	Pakpattan	642	411	231	153	71	82	90	55	35
7	Chiniot	509	326	183	88	46	42	68	44	24
8	Jhang	1271	608	663	187	102	85	158	90	68
9	Rajanpur	966	638	328	86	53	33	69	44	25
10	Rahim Yar Khan	2223	1115	1108	383	195	188	214	130	84
11	DG Khan	5076	2914	2162	190	106	84	123	78	45
12	Lodhran	575	251	324	153	83	70	93	58	35
13	Bahawalpur	5278	2893	2385	287	121	166	153	83	70
14	Muzaffargarh	1583	743	840	225	116	109	132	90	42
15	Bahawalnagar	1590	900	690	368	150	218	188	103	85
16	Multan	3358	2276	1754	220	100	120	164	107	57

Number of Colleges

Sr No	Punjab	District	Intermediate College	Degree College	Post Graduate College
1	North	Khushab	3	12	3
2	North	Mian Wali	4	16	2
3	North	Sargodha	8	44	16
4	North	Chakwal	24	30	4
5	Centre	Bhakkar	1	16	2
6	Centre	Pakpattan	2	6	2
7	Centre	Chiniot	8	8	3
8	Centre	Jhang	11	12	5
9	South	Rajanpur	4	8	3
10	South	Rahim Yar Khan	3	18	18
11	South	DG Khan	4	10	1
12	South	Lodhran	5	11	0
13	South	Bahawalpur	7	29	11
14	South	Muzaffargarh	6	12	4
15	South	Bahawalnagar	10	19	9
16	South	Multan	20	28	8

Annexure G: Health Data (Hospitals, Dispensaries, RHCs, BHCs)

Sr No	District	Hospitals		Dispensaries		RHCs		BHCs	
		No	Beds	No	Beds	No	Beds	No	Beds
1	Khushab	8	437	32	0	4	80	34	82
2	Mian Wali	6	381	17	0	18	360	74	0
3	Sargodha	19	1703	53	40	17	250	122	240
4	Chakwal	6	380	8	0	9	168	71	130
5	Bhakkar	5	501	26	0	5	94	40	82
6	Pakpattan	6	268	13	0	5	100	53	106
7	Chiniot	4	230	11	11	3	60	39	72
8	Jhang	8	501	49	4	10	180	59	102
9	Rajanpur	6	334	13	0	6	125	32	64
10	Rahim Yar Khan	8	1889	64	0	19	356	108	208
11	DG Khan	10	1178	34	4	12	204	53	102
12	Lodhran	4	217	16	6	4	80	50	96
13	Bahawalpur	15	2472	70	4	12	222	82	146
14	Muzaffargarh	9	437	30	21	14	260	76	144
15	Bahawalnagar	11	711	37	0	10	200	105	204
16	Multan	14	1659	51	0	10	166	85	164

Annexure H: List of Industries

1.	Chiniot	Ramzan Sugar Mill Hassan Cotton Factory Mubarak Shah Rice Mills Rung Shah Rice Mills Madina Rice Mills	2.	Lodhran	Maan Cotton Ginners & Oil Mills, Lessee Of Abbaseen Industries Pvt Ltd cotton Ginning Pressing & Oil Mills Prime Cotton Industries Munir Seed Industries (Pvt) Ltd. Sohail Kashif Cotton Factory Shabbir Cotton & Oil Mills
3.	Kalar Kahar	DG Cement Bestway Cement	4.	Muzaffar garh	Al-Hamd Cotton Industries Allied Cotton Industries Chand Khan Cotton Industries Makkah Madina Cotton Factory & Oil Mills
5.	Jhang	Amin Brothers Cement Industry	6.	Rajanpur	Spinwell Fibers (Pvt) Ltd Mohsin Brothers Cotton Ginning & Pressing Factory Channer Cotton Industries
7.	Bahawaln agar	Bismillah Cotton Industries (Pvt) Ltd. Mudassar Cotton Industries (Pvt) Ltd. Chaudhry Cotton Ginners, Al -Haq Cotton Ginning Pressing & Oil Mills Masood Model Ginning Factories (Pvt) Ltd Nasir Cotton Ginning & Oil Mills Muslim Cotton Ginning & Allied Industries Ashraf Sugar Mills Ltd. Dera Bakha Cotton Factory, Wahhab Cotton Factory	8.	Dera Ghazi Khan	Nasuha Cotton Ginners 247 Burhan Cotton Industries (Pvt) Ltd. Taunsa Cotton Ginners Mehar Cotton Ginning Factory Tayyab Imran Cotton Industries

		Zephyr Agro Chemicals (Pvt) Ltd., Sheikh Cotton Ginners & Oil Mills			
9.	Bahawalpur	Muhkam Cotton Factory Sadique Cotton Jinnars Bismillah Cotton Industries Khan Jinnars Pvt Alhamd Oil Mills Zaman Oil Mills Maqbool Flour Mills Al Haq Cotton Factory Shikrani Model Industries Ali Hussain Cotton Factory Cheema Industries	10.	Mianwali	M/s. Mian Wali Cotton Factory
11.	Pakpattan	Baba Farid Sugar Mills M/s. Anmool Cotton Factory,			

Annexure I: Cultural & Archeological Sites

District	Name	Type	Location
Rajanpur	Shrine of Hazrat Taj Mahmud	Shrine	Rajanpur
Chakwal	Kallar (temple) or Sassi da Kallara	Temple	Chakwal
	Ruined Buddhist Stupa and area around it	Archaeology site	Chakwal
	Satghara Temple	Temple	Chakwal
Chiniot	Shrine of Shah Burhan	Shrine	Chiniot
Jhang	House of Abdus Salam, Jhang	National Monument	Jhang
	Shrine of Shah Saiq Nihang	Shrine	Jhang
	Shrine of Pir Ghazi	Shrine	Jhang
	Shrine of Pir Abdur Rehman Qureshi	Shrine	Jhang
Bahawalpur	Noor Mahal	Fort	Bahawalpur
	Jamia Masjid Al-Sadiq	Mosque	Bahawalpur
	Masjid e Hajat	Mosque	Bahawalpur
	Shrine of Hazrat Hasan Darya Kabir	Shrine	Bahawalpur
	Shrine of Khawaja Khuda Bux	Shrine	Khairpur Tamewali
	Fareed Gate	Gate	Bahawalpur
	Abbasi Mosque	Mosque	Bahawalpur
	Sadiq Dane High School	Public Building	Farid Gate, Bahawalpur
Multan	Tomb of Shah Rukn-e-Alam	Shrine	Multan
	Tomb of Shah Ali Akbar's mother	Shrine	Suraj Miani
	Tomb of Shams Tabriz	Shrine	Suraj Miani
	Tomb of Shah Yousaf Gardazi	Shrine	Multan

	Shrine of Hazrat Bahuddin Zakriya	Shrine	Multan
	Shrine of Hazrat Makhdoom Rashid	Shrine	Multan
	Masjid Wazir Khan	Mosque	Multan
	Parahladpuri Temple	Temple	Multan
	Fortification Wall of Shujabad City	Archeological site	Shujahabad
Muzaffargarh	Tomb of Thar Khan Nahar	Shrine	Sitpur
	Tom of Sheikh Sadan Shaheed	Shrine	Village Sadan
	Fort of Mahmood Kot	Fort	Muzaffargarh
D.G.Khan	Shrine of Syed Ahmad Sultan Sakhi Sarwar	Shrine	Muqam Village
	Shrine of Hazrat Muhammad Seleman Taunsvi	Shrine	Taunsa Sharif
	Shrine of Hazrat Khawaja Mahmood	Shrine	Taunsa Sharif
	Fort Manro	Fort	D.G.Khan
Rahim Yar Khan	Shrine of Hazrat Sadar-Ud-Din Shamsi and son	Shrine	RYK
Khushab	Amb Temples	Temple/Archaeology site	Khushab
	A red sandstone temple	Temple	Khushab

Anexure J Questionnaire for Field Visit

Punjab Rural Sustainable Water Supply and Sanitation Project (PRSWSSP) PC-II

- *Introduction of Team and overview of the project*
- *Purpose of conducting Focus Group Meeting*
- *Purpose of Project and expected Outcomes*

1. Name of Facilitator _____

2. Date of Visit: _____

3. Name of Tehsil: _____

4. Name of Village: _____

VILLAGE PROFILE:		
<u>1</u>	Settlement:	1. Clustered 2. Semi-clustered 3. Hamleted 4. Dispersed
<u>2</u>	No of households	
<u>3</u>	H.H Size	
<u>4</u>	Major livelihood means	1. _____ 2. _____ 3. _____ 4. _____
<u>5</u>	Population	1. Male _____ 2. Female _____ 3. Children _____ 4. Total: _____
<u>6</u>	Ethnic group if any:	
<u>7</u>	Major Crops:	
<u>8</u>	Average Land Holding:	

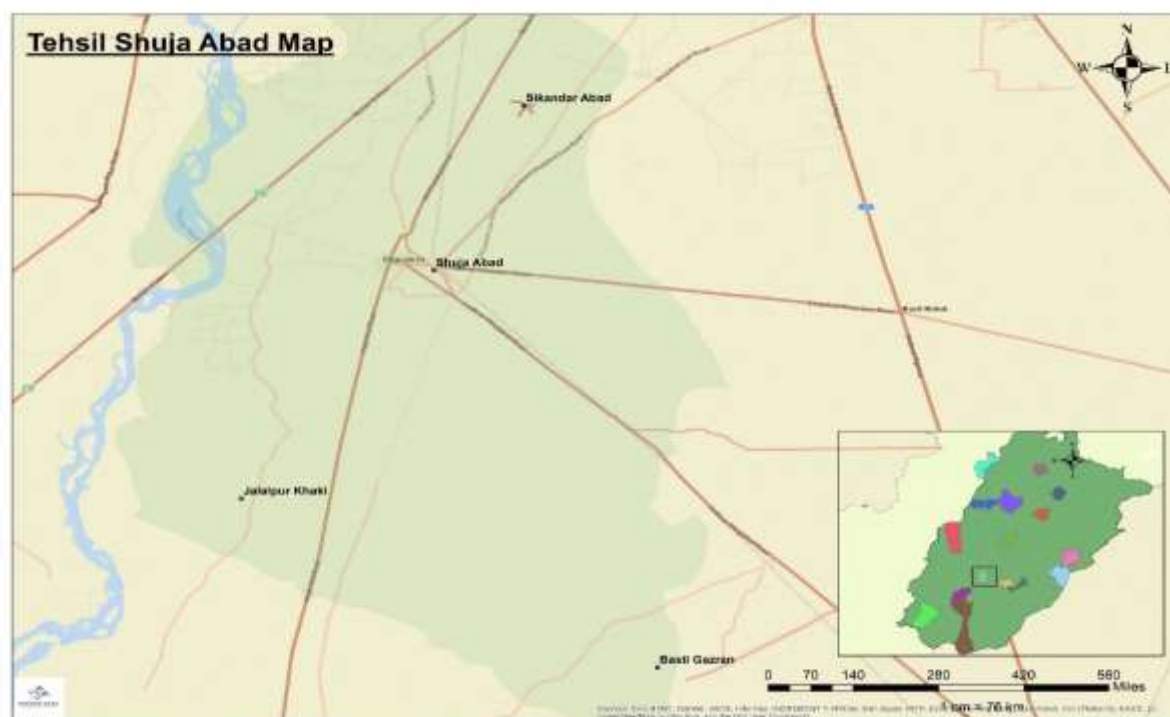
9	Average H.H income:	
---	---------------------	--

Annexure K Villages Profile

District, Multan; Tehsil Shujaabad

Shujaabad is a city and the capital of Shujabad Tehsil of Multan District in the Punjab province of Pakistan. It is located about 45 km in south from Multan. Chenab River is situated in the west of city. Neighboring settlements include Jalalpur Pirwala, Multan and Lodhran.

This tehsil has been chosen for the initiate of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people. Four settlements named; Shujaabad, Basti Gazran, Jalalpur Khaki and Sikandar Abad were selected among all to be assessed by our team. These villages were carefully chosen on the basis of particular criteria which were flood prone area and near water resource.



Sr.No	District	Tehsil	Villages	Characteristics
-------	----------	--------	----------	-----------------

1	Multan	Shuja Abad	Shujaabad	Near to Railway Station
2			Basti Gazran	Very remote, no settlement
3			Jalalpur Khaki	Established village
4			Sikandar Abad	Settled village

TEHSIL SHUJAABAD

1. Village Shujaabad

The population of village Shujaabad was comprised of more than 6,000 people on average. The type of the settlement was clustered and colonies were adjacent. The average land holding was 125 acres and the number of household were 1,000 in Shujaabad village. The household size was consisted of 6 members per house. All the people were Muslims and no ethnic group was found there. The major sources of livelihood were Agriculture, Labors and Jobs. The average household income fluctuated between 25,000-30,000. The major crops were Wheat and Sugarcane.

Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Tehsil Administration in village Shujaabad. But, there was no specific management for the local level grievance redressal mechanisms and to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects.



There was a water supply system along with the water tanks and pipelines. The source of water was ground water which was at the depth of 150 feet. Instead of these facilities, people stated that the quality of potable water was not satisfactory and the water was smelly with salty taste. The condition of sanitation system was also very useless. The existing scheme was exposed. Villagers faced many health issues due to this situation. Thus, these conditions illustrated that there were no proper water and sanitation services for the people and it was intensely needed to introduce appropriate sewage system and recuperation of pipelines and water tanks should also be endorsed.

During the survey, Focused Group Discussion (FGD) was held in the village to discover the overall scenario and in-depth information of the existing circumstances. Moreover, the views on the project and land donation were also noted. The community of village Shujaabad was very supportive and willing throughout discussion. There will be no effects on species of nearby area. Instead, the project will pose positive impacts on the overall community.

The Government land was available and the community was agreed to donate the land for the project use.

2. Village basti gazran (Bagrain)

The population of village Basti Gazran was comprised of more than 12,000 people on average. The type of the settlement was semi-clustered as colonies were adjacent. The average land holding was 3 acres and the number of household were 2,000 in Basti Gazran village. The household size was consisted of 6 members per house. All the people were Muslims and no ethnic group was found there. The major sources of livelihood were Agriculture, Labors and Jobs. The average household income was almost 20,000. The major crops were Wheat, Cotton and Sugarcane.

Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in the village. Moreover, it was also responsible for the management of local level grievance redressal mechanisms and to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. Both males and females were involved in the management of water and sanitation services in their community.



There was a water supply system along with the water tanks and pipelines. The source of water was ground water which was at the depth of 200 feet. Instead of this facility, people pointed out that the quality of potable water was not suitable and the water was smelly and saline with salty taste. The condition of sanitation system was also poor and pathetic. The existing scheme was exposed. Villagers faced numerous health and Hepatitis C was observed in numerous people. Thus, these conditions illustrated that there were no proper water and sanitation services for the people and it was intensely needed to introduce those facilities appropriately.

During the survey, Focused Group Discussion (FGD) was held in the village to discover the overall scenario and in-depth information of the existing circumstances. Moreover, the views on the project and land donation were also noted. The community of village remained supportive and willing throughout discussion. There will be no effects on species of nearby area. Instead, the project will pose positive impacts on the overall community in terms of water, sanitation, health and environmental aspects.

The land was available and also they were agreed to donate the land of their community for the project use. There was no conflict regarding land donation.

3. Village Jalal Pur khaki (Basti Mansay Wala)

The population of this village was 1,000. The average land holding was almost 5 acres by the individuals and the number of household was 80 in the Jalal Pur Khaki. Here, people lived as separate family. The household size was 6. No ethnic group was present only Muslims lived there. The major sources of livelihood were Agriculture and Job Holding. 70-80% people earned their livelihood by means of agricultural activities while rest of the 20% individuals were Job Holders. The average household income fluctuated between 7,000-8,000. The major crops were Wheat, Cotton and Sugarcane.

Typically, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. But, it was the responsibility of Police to solve all the disputes in the entire

village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village.

The source of drinking water was underground water for the natives of rural area that was 60 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There was neither filtration plant nor wastewater treatment plant. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. It passed throughout the village in that exposed way producing smell and destroying the aesthetic beauty of village. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.



They had to face many problems regarding health due to this situation. The females were specially at great risk due to drinking of polluted water. Unhygienic conditions posed huge impact on the health conditions of mothers and young girls. The pregnant ladies and young girls particularly faced hardships because of these scenarios because unclean conditions promoted infant's mortality in the rural areas. Flies and mosquitoes were common there and spread diseases among people. Diarrhea, Hepatitis and Cholera were some major diseases arising specifically in children.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community of Jalal Pur Khaki remained cooperative throughout the discussion. Flora, fauna, air and land of the nearby area will not be influenced. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All this scenario was observed during the site visit.

They stated that they had no issues about land contribution. They were willing to donate their land for the project use.

4. Village Sikandar Abad

The population of this village was 60,000. The average land holding was almost 3 acres by the individuals and the number of household was 1500 in Sikandar Abad. Here, people lived as separate family. The household size was 6. There was no ethnic group and all the people were Muslims. The major sources of livelihood were Agriculture, Job based and Labors. 70% people earned their livelihood by means of agricultural activities, 10% people were Job Holders while rest of the 20% individuals were Labors. The average household income fluctuated between 15,000-20,000. The major crops were Wheat, Rice and Sugarcane.

Normally, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village. It was more effective than police.

The source of drinking water was ground water for the natives of rural area that was 150 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There had been installed water filtration plants for the community. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. It passed throughout the village in that exposed way. It was scattered and was collected at a specific place. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.

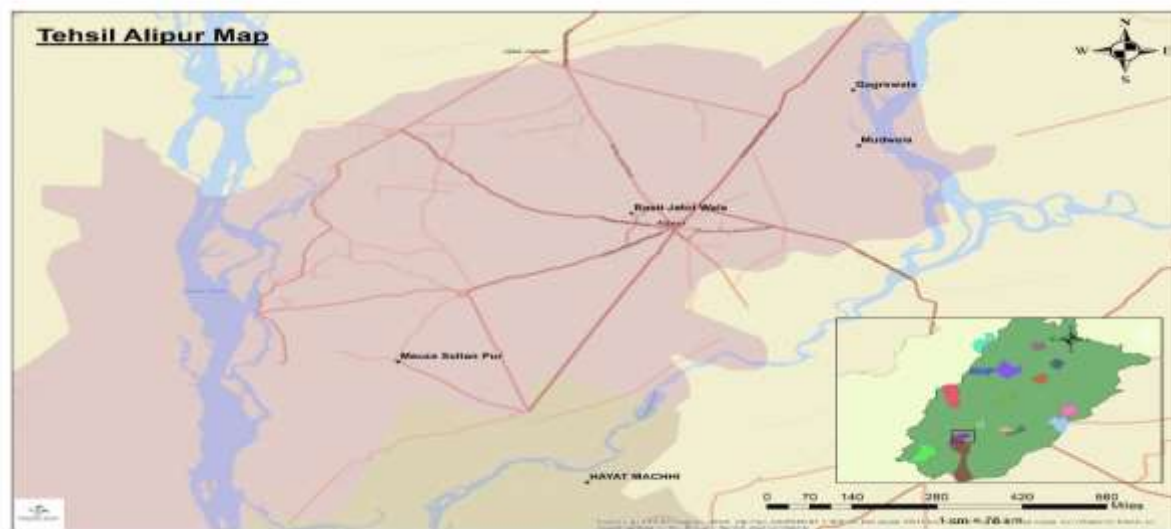


Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community of Sikandar Abad remained cooperative throughout the discussion. There will be no effects on species of nearby area. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All this scenario was observed during the site visit. They specified that they had no issues regarding land donation and also the land was available.

Tehsil, Alipur- District, Muzaffargarh

Alipur, is a tehsil of Muzaffargarh District in the Punjab province of Pakistan. Its capital is Alipur city. Alipur was a Panwar Rajput state till 1701. Later this territory came under control of newly established nawabs of Muzaffargarh.

This tehsil has been chosen for the initiate of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people. Four settlements named; Basti Jatoli Wala, Gagrewale, Mouza Sultan Pur, Mudwala were selected among all to be assessed by our team. These villages were carefully chosen on the basis of particular criteria which were flood prone area and near water resource.



Sr.No	District	Tehsil	Villages	Characteristics
1	Muzaffargarh	Alipur	Basti Jatoi Wala	Spontaneous Population with unplanned area
2			Mouza Sultan Pur	Uncultivated Land
3			Mudwala	Near Water resource, Uncultivated land
4			Gagrewale	Settled area

5. Village Basti Jatoi Wala

The population of this village was 4,000. The average land holding was almost 4 acres by the individuals and the number of household was 500 in Basti Jatoi Wala. The type of settlement was semi-clustered. Here, people lived as separate family. The household size was 7. There was no ethnic group and all the people were Muslims. The major sources of livelihood were Agriculture, Job based and Labors. 80% people earned their livelihood by means of agricultural activities, 5% people were Job Holders while rest of the 15% individuals were Labors. The average household income fluctuated between 2,000-8,000. The major crops were Wheat, Wheat, and Rice.

Normally, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradarries and Religious Sects as people of different cast lived in this village. It was more effective than police.

The source of drinking water was ground water for the natives of rural area. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for drinking purpose. There was a need to improve the drinking water quality.

The existing drainage system was open and uncovered. Water was flowing in the streets as no proper drainage system was present there. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.



Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community of Basti Jatoli Wala remained cooperative throughout the discussion. Flora, fauna, air and land of the nearby area will not be influenced. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All these scenarios were observed during the site visit. They specified that they had no issues regarding land donation and also the state\ government land was available.

6. Village Mouza Sultan Pur

The population of the village was comprised of more than 10,000 people on average. The type of the settlement was clustered and colonies were adjacent. The average land holding was 10 acres and the number of household were 1,500 in Mouza Sultan Pur village. The household size was consisted of 7 members per house. All the people were Muslims and no ethnic group was found there. The major sources of livelihood were Agriculture, Labors and Jobs. 80% people were related to Agricultural activities, 20% individuals were labors and 10% people were doing Government Jobs. The average household income fluctuated between 10,000-15,000. The major crops were Wheat and Cotton.



Usually, there was no dispute and violent conflict on water among the people of this village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in village Mouza Sultan Pur. And, also the management for the local level grievance redressal mechanisms was managed by this person. Feudal system was seen there. It was common that one person hold all the land and rest of the people were working under his super vision. Moreover, he solved all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. And no one had the right to disobey him as everyone worked under his administration.

People obtained water through tap water and also with hand pumps. The source of water was ground water. The quality of the water was good and drinkable. The taste was satisfactory according to the villagers. But, the condition of sanitation system was not good enough. There were drains but those were exposed. All these drains passed throughout the village in the exposed way. Villagers faced many health issues due to these conditions. Hepatitis C was a common disease there.

During the survey, Focused Group Discussion (FGD) was held in the village to discover the overall scenario and in-depth information of the existing circumstances. Moreover, the views on the project and land donation were also noted. Equal participation of men and woman was ensured. The community of village

Mouza Sultan Pur remained cooperative throughout discussion. There will be no effects on species of nearby area. Instead, the project will pose positive impacts on the overall community.

The people of Sultan Pura village were not agreed to donate their land for the project work. They refused to contribute in this manner.

7. Village Mudwala

The population of village Mudwala was comprised of 12,000 people on average. The type of the settlement was clustered as colonies were adjacent. The average land holding was 10 acres and the number of household were 2,000 in Mudwala village. The household size was consisted of 6 members per house. All the people were Muslims and no ethnic group was found there. The major sources of livelihood were Agriculture, Labors, Private business and Jobs. The average household income was almost 10,000. The major crops were Wheat, Vegetables and Sugarcane.



Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in the village. Moreover, it was also responsible for the management of local level grievance redressal mechanisms and to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. The feudal system was observed there. Almost entire community worked under the supervision of that person. The whole land of village was the authority of a particular person and all the villagers earned by working on that land. No one had the right to challenge that person. Even they could not speak for their rights.

The source of water was ground water which was at the depth of 200 feet. People obtained water either through Boring system or from tube wells. The quality of water was average but it cannot be considered healthy. The color was changed. Yellowish colored water was being drunk by the villagers. The condition of sanitation system was also poor and pathetic. The existing scheme was exposed. Villagers faced numerous health issues and Hepatitis C was observed in numerous people. Thus, these conditions illustrated that there were no proper water and sanitation services for the people and it was intensely needed to introduce those facilities appropriately.

During the survey, Focused Group Discussion (FGD) was held in the village to discover the overall scenario and in-depth information of the existing circumstances. Moreover, the views on the project and land donation were also noted. The community of village remained supportive throughout discussion. Both genders; man and woman participated in focused group discussion. There will be no effects on species of nearby area. Instead, the project will pose positive impacts on the overall community in terms of water, sanitation, health and environmental aspects.

There was no availability of land in the village Mudwala which could be used for the project use.

8. Village Gagrewale

The population of this village was 10,000. The average land holding was almost 15 acres by the individuals and the number of household was 1,500 in the Gagrewale. Here, people lived as separate family. The household size was 7. No ethnic group was present only Muslims lived there. The major sources of livelihood were Agriculture, Labors and Job Holding. 70-80% people earned their livelihood by means of agricultural activities, 10% people were labors while rest of the 10% individuals were Job Holders. The average household income fluctuated between 10,000-15,000. The major crops were Wheat, Cotton and Sugarcane.



Typically, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. But, local level grievance redressal mechanisms was managed by Police in case if Panchayat fails to deal the matter. And also it was the responsibility of Police to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village.

The source of drinking water was underground water for the natives of rural area that was 60 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There was neither filtration plant nor wastewater treatment plant. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. It passed throughout the village in that exposed way producing smell and destroying the aesthetic beauty of village. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.

They had to face many problems regarding health due to this situation. The females were specially at great risk due to drinking of polluted water. Unhygienic conditions posed huge impact on the health conditions of mothers and young girls. Due to open defecation, the pregnant ladies and young girls particularly faced hardships because unclean conditions promoted infant's mortality in the rural areas. Flies and mosquitoes were common there and spread diseases among people. Diarrhea, Hepatitis and Cholera were some major common diseases.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community of Gagrewale remained cooperative throughout the discussion. Flora, fauna, air and land of the nearby area will not be influenced. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All this scenario was observed during the site visit.

They stated that they had no issue about land contribution. They were willing to donate their land for the project use. State\ Government land was available there.

Tehsil, Bahawalnagar - District, Bahawalnagar;

Bahawalnagar is the capital city of Bahawalnagar District situated in the south east region in the Punjab province of Pakistan. The city of Bahawalnagar is the headquarter of the district and tehsil as well.[3] It is the 54th largest city of Pakistan by population according to the 2017 census.. Old name of Bahawalnagar was Rojanwali/Ubbha. It was named Bahawalnagar in 1904 after Bahawal Khan V, the ruler of the Bahawalpur state comprising the present districts of Bahawalpur, Bahawalnagar and Rahim Yar Khan.[4] It is 192 miles south of Lahore and about 120 miles east of Bahawalpur. River Sutlej passes on the northern side at a distance of about 6 miles

This particular tehsil has been chosen for the initiate of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people. Among all the villages, five settlements such as Chak No 229 JB, Warra Thatta, Chak No 155 JB, Darutta, and Muhammadi Sharif were selected in the tehsil, Bhawana to be assessed by our survey team. These villages were carefully chosen on the basis of particular set criteria which was comprised of uncultivated land, water resource and spontaneous population.



Sr.no	District	Tehsil	Villages	Characteristics
1	Bahawalnagar	Bahawalnagar	Bahadurka Sharki	Groundwater Resources
2			Tekuram Pura	Established Village
3			Chaweka Hatar	Near Water Resource
4			Mina Sanatteka	Settled area

9. Profile of Village Bahadurka Sharki

The average land holding was 3 acres by the individuals and the number of household were 200. The type of settlement was semi-clustered. Usually, people lived in joint family system where every family comprised of at least 3-4 children. The household size varied between 6-7. There was no ethnic group and all the people were Muslim. The major sources of livelihood were Agriculture and other were Job holders. 90% people earned their livelihood by means of agricultural activities while rest of the 10% individuals were job holders. The average household income fluctuated between 10,000-20,000. The major crops were Wheat, Cotton and Rice.

Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Authorities in this village. They also managed all the local level grievance redressal mechanisms. This was the responsibility of Authorities and other influential members to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. Moreover, they solved all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects.



The source of potable water was underground water which was at the depth of 60 feet. People had stated that they felt an odour in the water. Sometimes, water color was also changed. People obtain Yellow colored water for the use of drinking. There was a need to improve the drinking water quality. The sanitation condition was poor as the existing sewerage system was open and people living nearby were not satisfied with this. They had to face many problems regarding health due to this situation. Flies and mosquitoes were common there and spread diseases among. There was no proper system of drainage and no water and sanitation service for the people.

During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. Equal participation of man and woman was ensured. The community was very cooperative. There will be no effects on species of the area during the project work.

The land was available in the community and also they were willing to donate the land for the project work.

10. Profile Of Village Chaweka Hatar

The population of this village was 10,000. The average land holding was almost 3 acres by the individuals and the number of household were 10,000. The type of settlement was clustered. Here, people lived as separate family. The household size was 7-8. All people were Muslim and no other ethnic group was found there. The major source of livelihood was Agriculture. 90% people earned their livelihood by means of agricultural activities while rest of the 10% individuals were Labors. The average household income fluctuated between 15,000-20,000. Wheat was the major crop in the village.

Typically, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Government Authorities in this village. They also managed all the local level grievance redressal mechanisms. This was the responsibility of authorities to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village.

The source of drinking water was ground water for the natives of rural area that was 120 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There was neither filtration plant nor wastewater treatment plant. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.



The females were specially at great risk due to drinking of polluted water. Unhygienic conditions posed huge impact on the health conditions of mothers and young girls. There was a major issue of open defecation. Due to this problem, the pregnant ladies and young girls particularly faced hardships because unclean conditions promoted infant's mortality in the rural areas. Flies and mosquitoes were common there and spread diseases among people. Diarrhea, Hepatitis and Cholera were some major diseases arising specifically in children.

During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. There were 12 males and 8 females were present from the community for the discussion on the project activities. The community remained very cooperative. They were willing to cooperate at the maximum during the tenure of project. Environmental Assessment depicts that there will be no effects on the species of nearby area. Moreover, there will be no negative impacts on the community land if project activities are started. Overall, maximum positive effects had been observed on the public during the site visit.

The land was available in the village and the villagers were also agreed to donate the land for the project work.

11. Profile Of Village Mena Sanatteka

This village comprised of 38,000 populations. People lived in the houses which were in adjacent position along with the narrow streets. The type of the settlement was clustered. The average land holding was nearly 5 acres by the individuals. The number of household were 1,000-1,200. The household size was comprised 7 on average. No ethnic group was present; all people were Muslims. Their main sources of livelihood included Agriculture, Job Holding and Labour aspects. 70% people earned their livelihood by means of agricultural activities and 10% people were job holder while rest of the 20% individuals were Labors. The average household income fluctuated between 10,000-15,000. The major crops found there were Cotton, Sugarcane and Rice.

Commonly, there was no dispute and violent conflict of water among the people but sometimes other issues may arise related to domestic violence and clashes on land. And, if such circumstances may arise then the conflict resolution mechanism and decision-making system was dealt by both through Panchayat System in this village. Also the local level grievance redressal mechanisms was managed by Panchayat. It was also the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects. They listened both parties and then punished the one against whom the evidences were presented. So, evidence based decisions were made here. Feudal system was present there. Everyone was bound to obey the particular person in decision-making matters.



The source of drinking water was ground water for the natives of rural area that was 120 feet in depth. People got water from tube-well. The quality of water was not satisfactory. The water was contaminated and even sometimes, water color was also changed. Yellowish colored water with a bad odor reached to people for the drinking purpose. There was a need to improve the drinking water quality. The drainage system was exposed and open. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, the conditions of public health and hygiene were meager.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The community remained cooperative enough. Flora and fauna of the nearby area will not be affected. Moreover, there were no negative impacts on the overall environment due to this project. All this scenario had been observed during the site visit.

The land of state was available in the village and but people decided to decide within the community to donate the land for the project work.

12. Profile of village Tekuram Pura

This village comprised of 20,000 populations. The colonies were adjacent and the houses existed as semi-clustered type. The average land holding was almost 3 acres. The number of household was nearly 5,000. The household size was 6-7 on average. Wheat and Cotton were the major crops in the village. Three main sources of livelihood were found which included Agriculture, Job Holding and Labour aspects. 90% people earned their livelihood by means of agricultural activities and 10% people were Labors. The average household income fluctuated between 10,000-15,000. There was no ethnic group.



Typically, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Government Authorities in this village. They also managed all the local level grievance redressal mechanisms. This was the responsibility of authorities to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village.

The source of drinking water was ground water for the natives of rural area which was at a depth of 120 feet. The quality of water was very bad. The water was contaminated to an extent that even sometimes; water color was also changed. Yellow colored water along with a bad smell reached to the people for the drinking purpose. The water was turbid. There was a need to improve the drinking water quality. Only 2% people obtained safe and clean drinking water. The condition of drainage system was pathetic. It was exposed and uncovered. There was a lack of proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community remained cooperative throughout the discussion. Flora, fauna, air and land of the nearby area will not be influenced. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All this scenario was observed during the site visit.

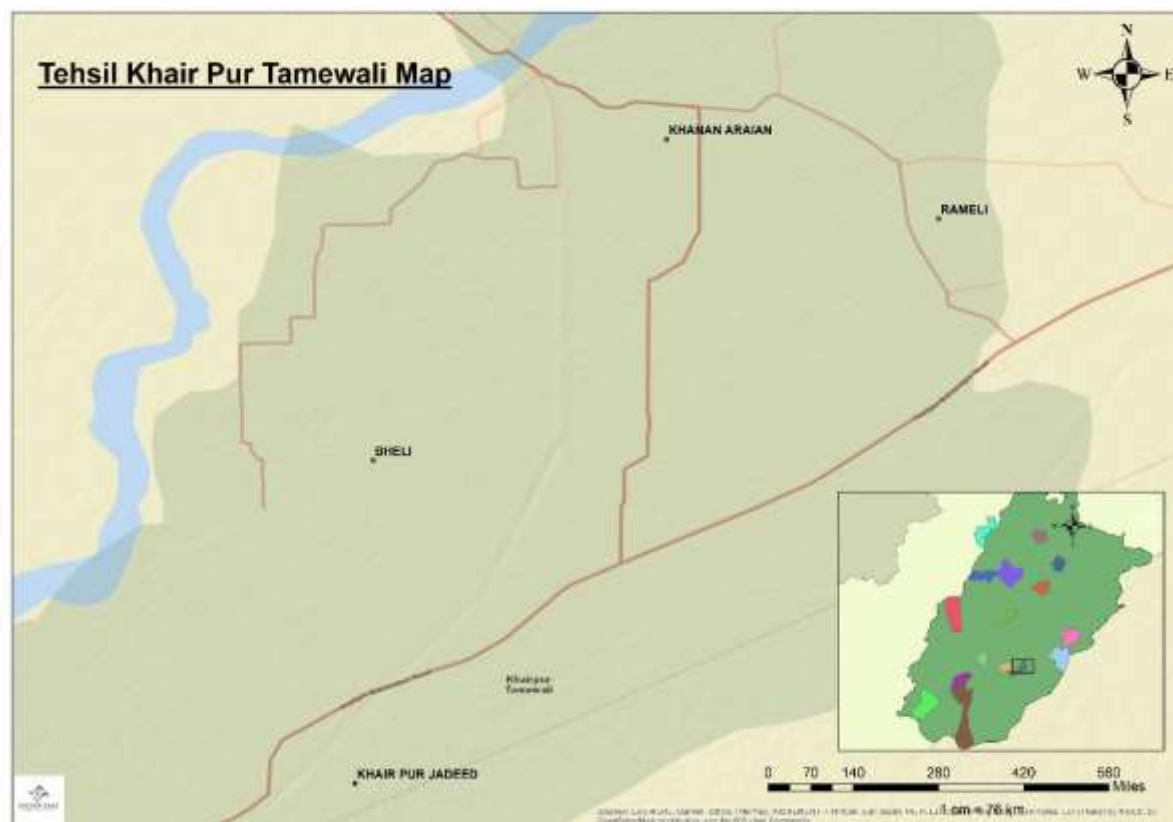
The land was available and they stated that they had no issues regarding land contribution for the project work.

District, Bahawalpur; Tehsil, Khairpur Tamewali

Khairpur Tamewali is a city and the capital of Khairpur Tamewali Tehsil, Bahawalpur District, Punjab, Pakistan. It was ruled by a Jadobansi Rajput king named Lakhi Rai Jadhaun till 1750, when Ahmad Shah Abdali seized it from the Raav. Khairpur Tamewali was known as only Khairpur in the early 18th century. It was named after "Tommy", an Englishman who discovered a meteor which fell in early 1900 at the junction of the Sidhnai Mailsi Link river and the Bahawal canal.[citation needed] The

meteor is still viewable at a museum in London, England.[citation needed] The name became Khairpur Tamewali with the passage of time.

This tehsil has been chosen for the initiate of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people. Four settlements named; Shujaabad, Basti Gazran, Jalalpur Khaki and Sikandar Abad were selected among all to be assessed by our team. These villages were carefully chosen on the basis of particular criteria which were flood prone area and near water resource.



Sr.No	District	Tehsil	Villages	Characteristics
1	Bahawalpur	Khairpur Tamewali	Khairpur Jadeed	Established Village
2			Bheli	Partially Uncultivated Land
3			Kanan Araian	Established Village
4			Rameli	Established Village

13. Village Kanan Araian

The population of village was comprised of 10,000 people on average. The type of the settlement was semi-clustered and colonies were adjacent. The average land holding was 10 acres and the number of household were 1,500-2,000 in the village. The household size was consisted of 6-7 members per house. All the people were Muslims and no ethnic group was found there. The major sources of livelihood were Agriculture, Labors and Jobs. The average household income fluctuated between 10,000-15,000. The major crops were Wheat, Vegetables and Sugarcane.



Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in village. But, there was no specific management for the local level grievance redressal mechanisms and to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. Feudal System was present and people were satisfied on this system.

The source of water was ground water which was at the depth of 60 feet. People stated that the quality of potable water was not satisfactory and the water was smelly with salty taste coming from wells and hand pumps. The condition of sanitation system was also very useless. The existing scheme was exposed. Villagers faced many health issues due to this situation. Thus, these conditions illustrated that there were no proper water and sanitation services for the people and it was intensely needed to introduce appropriate sewage system and recuperation of pipelines and water tanks should also be endorsed.

During the survey, Focused Group Discussion (FGD) was held in the village to discover the overall scenario and in-depth information of the existing circumstances. Moreover, the views on the project and land donation were also noted. The community of the village was very supportive and willing throughout discussion. There will be no effects on species of nearby area. Instead, the project will pose positive impacts on the overall community.

The land was available and the community was agreed to donate the land as well for the project use.

14. Village Bheli

The population of village was comprised of more than 3,500 people on average. The type of the settlement was semi-clustered as colonies were adjacent. The average land holding was 4 acres and the number of household were 2,000. The household size was consisted of 6 members per house. All the people were Muslims and no ethnic group was found there. The major sources of livelihood were Agriculture, Labors and Private Jobs. The average household income was almost 20,000. The major crops were Wheat, Rice and Sugarcane.

Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in the village. Moreover, it was also responsible for the management of local level grievance redressal mechanisms and to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. People were satisfied with this system.

The source of water was ground water which was at the depth of 120 feet. People pointed out that the quality of potable water was not suitable and the water was smelly and saline with salty taste. The condition of sanitation system was also poor and pathetic. The existing scheme was exposed. Villagers faced numerous health and Hepatitis C was observed in numerous people. Thus, these conditions illustrated that there were no proper water and sanitation services for the people and it was intensely needed to introduce those facilities appropriately.



During the survey, Focused Group Discussion (FGD) was held in the village to discover the overall scenario and in-depth information of the existing circumstances. Equal participation of both genders was ensured in the discussion. Moreover, the views on the project and land donation were also noted. The community of village remained supportive and willing throughout discussion. There will be no effects on species of nearby area. Instead, the project will pose positive impacts on the overall community in terms of water, sanitation, health and environmental aspects.

The land was available and also they were agreed to donate the land of their community for the project use. There was no conflict regarding land donation.

15. Village Rameli

The population of this village was 1,800-2,000. The average land holding was almost 3 acres by the individuals and the number of household was 200. Here, people lived as separate family. The household size was 6. The type of settlement was clustered. No ethnic group was present only Muslims lived there. The major sources of livelihood were Agriculture and Labors. 70-80% people earned their livelihood by means of agricultural activities while rest of the 20% individuals were Labors. The average household income fluctuated between 10,000-15,000. The major crops were Wheat, Cotton and Sugarcane.



Typically, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. And, it was also the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village.

The source of drinking water was underground water for the natives of rural area that was 100 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There was neither filtration plant nor wastewater treatment plant. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. It passed throughout the village in that exposed way

producing smell and destroying the aesthetic beauty of village. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.

The females were specially at great risk due to drinking of polluted water. Unhygienic conditions posed huge impact on the health conditions of mothers and young girls. Due to open defecation, pregnant ladies and young girls particularly faced hardships because of these scenarios because unclean conditions promoted infant's mortality in the rural areas. Diarrhea, Hepatitis and Cholera were some major diseases arising specifically in children.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community remained cooperative throughout the discussion. Flora, fauna, air and land of the nearby area will not be influenced. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All this scenario was observed during the site visit.

They stated that they had no issues about land contribution. They were willing to donate their land for the project use.

16. Village Khairpur Jadeed

The population of this village was 41,425. The average land holding was almost 5 acres by the individuals and the number of household was 7,000. The type of settlement was clustered. Here, people lived as separate family. The household size was 6. There was no ethnic group and all the people were Muslims. The major sources of livelihood were Agriculture and Labors. 80% people earned their livelihood by means of agricultural activities while rest of the 20% individuals were Labors. The average household income fluctuated between 15,000-20,000. The major crops were Wheat, Rice and Sugarcane.

Normally, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village. It was more effective than police. Feudal system was present in the village. And community was satisfied with this system as well.



The source of drinking water was ground water for the natives of rural area that was 150 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There had been installed water filtration plants for the community. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. It passed throughout the village in that exposed way. It was scattered and was collected at a specific place. There was no proper system of drainage, potable clean

drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community remained cooperative throughout the discussion. There will be no effects on species of nearby area. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All this scenario was observed during the site visit. They specified that they had no issues regarding land donation and also the land was available.

Tehsil Liaquat Pur - District Rahim Yar Khan

Liaquatpur is a city and capital of Liaquatpur Tehsil in Rahim Yar Khan District, Punjab, Pakistan. It is located at 28°55'60N 70°57'0E with an altitude of 95 metres.

This particular tehsil has been chosen for the initiate of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people. Among all the villages, five settlements such as Chak No 229 JB, Warra Thatta, Chak No 155 JB, Darutta, and Muhammadi Sharif were selected in the tehsil, Bhawana to be assessed by our survey team. These villages were carefully chosen on the basis of particular set criteria which was comprised of uncultivated land, water resource and spontaneous population.



Sr.no	District	Tehsil	Villages	Characteristics
1			21\ ABS	Underground water Resource

2	Rahim Yar Khan	Liaquat Pur	Bahar Khaki	Groundwater Quality
3			Hayat Machi	Partially uncultivated land
4			Bet Murad	Established Village

17. Profile Of Village 21\Abs

The average land holding was 5 acres by the individuals and the number of household were 600 in the 21\ABS. Usually, people lived in joint family system where every family comprised of at least 3-4 children. The household size varied between 10-15. There was no ethnic group and all the people were Muslim. The major sources of livelihood were Agriculture and other were Job holders. 50% people earned their livelihood by means of agricultural activities while rest of the 50% individuals were job holders. The average household income fluctuated between 20-30K. The major crops were Wheat, Sugarcane and Rice.



Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Panchayat to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. Feudal system was seen there. It was common that one person hold all the land and rest of the people were working under his super vision. Moreover, he solved all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. And no one had the right to disobey him as everyone worked under his administration.

The source of potable water was underground water which was at the depth of 150 feet. People had stated that they felt an odour in the water. Sometimes, water color was also changed. People obtain Yellow colored water for the use of drinking. Although, there had been fixed a filtration plant near Mosques but still the quality of water was not satisfactory. There was a need to improve the drinking water quality. The sanitation condition was poor as the existing sewerage system was open and people living nearby were not satisfied with this. They had to face many problems regarding health due to this situation. Flies and mosquitoes were common there and spread diseases among. There was no proper system of drainage and no water and sanitation service for the people.

During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. Equal participation of man and woman was ensured. The community was very cooperative. There will be no effects on species of nearby area Moreover, no negative impacts of the projects had been observed during the site visit.

The land was available in the community but they were not willing to donate. Instead, they decided to discuss this matter in Panchayat. Then, they would clarify.

18. Profile Of Village Hayat Muchi

The population of this village was 15,000. The average land holding was almost 4 acres by the individuals and the number of household was 100-150 in the Hayat Muchi. Here, people lived as separate family. The household size was 6-7. Majority of the people were Muslim and no other ethnic group was found there. The major source of livelihood was Agriculture. 90% people earned their livelihood by means of agricultural activities while rest of the 10% individuals were Labors. The average household income fluctuated between 7,000-8,000. The major crops were Wheat, Sugarcane, Cotton and Potato.

Typically, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village.



The source of drinking water was ground water for the natives of rural area that was 120 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There was neither filtration plant nor wastewater treatment plant. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.

The females were specially at great risk due to drinking of polluted water. Unhygienic conditions posed huge impact on the health conditions of mothers and young girls. There was a major issue of open defecation. Due to this problem, the pregnant ladies and young girls particularly faced hardships because unclean conditions promoted infant's mortality in the rural areas. Flies and mosquitoes were common there and spread diseases among people. Diarrhea, Hepatitis and Cholera were some major diseases arising specifically in children.

During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. There were 6 males and 8 females were present from the community for the discussion on the project activities. The community remained very cooperative. They were willing to cooperate at the maximum during the tenure of project. Environmental Assessment depicts that there will be no effects on flora and fauna of the nearby area. Moreover, there will be no negative impacts on the community land if project activities are started. Overall, maximum positive effects had been observed on the public during the site visit.

The land was available in the village and the villagers were also agreed to donate the land for the project work.

19. Profile Of Village Bahar Khaki

This village comprised of 5,000-6,000 population. People lived in the houses which were in adjacent position along with the narrow streets. The type of the settlement was clustered. The average land holding was nearly 2-3 acres by the individuals. The number of household were 1,000-1,200. The household size was comprised 7 on average. No ethnic group was present; all people were Muslims. Their main sources of livelihood included Agriculture, Job Holding and Labour aspects. 25-30% people earned their livelihood by means of agricultural activities and 10% people were job holder while rest of the 60% individuals were Labors. The average household income fluctuated between 2,000-5,000. The major crops found there were Cotton, Wheat and Maize.

Commonly, there was no dispute and violent conflict of water among the people but sometimes other issues may arise related to domestic violence and clashes on land. And, if such circumstances may arise then the conflict resolution mechanism and decision-making system was dealt by both through Panchayat System in this village. Also the local level grievance redressal mechanisms was managed by Panchayat. It was also the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects. They listened both parties and then punished the one against whom the evidences were presented. So, evidence based decisions were made here.



The source of drinking water was ground water for the natives of rural area that was 120 feet in depth. People got water from tube-well. The quality of water was not satisfactory. The water was contaminated and even sometimes, water color was also changed. Yellowish colored water with a bad odor reached to people for the drinking purpose. There was a need to improve the drinking water quality. The drainage system was exposed and open. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, the conditions of public health and hygiene were meager.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The community remained cooperative enough. Flora and fauna of the nearby area will not be affected. Moreover, there were no negative impacts on the overall environment due to this project. All this scenario had been observed during the site visit.

The land of state was available in the village and people were also agreed to donate the land for the project work.

20. Profile of Village Bet Murad

This village comprised of 12,000 populations. The colonies were adjacent and the houses existed as semi-clustered type. The average land holding was almost 5 acres. Here, in this village the situation was different somehow. Most of the land was acquired by only one individual and rest of the people of entire village were dependent on the land of that specific person and, they worked under the supervision of that person. Hence, almost 70% people were landless. The number of household was nearly 100. The household size was 7 on average. The major crops found were Sugarcane, Rice and Wheat. Three main sources of livelihood were found which included Agriculture, Job Holding and Labour aspects. 20% people earned their livelihood by means of agricultural activities and 80% people were Labors. The average household income fluctuated between 5,000-10,000. There was no ethnic group.



Normally, there were no dispute and violent conflict of water among the people. Additionally, the issue of domestic violence was also not found there. If such kind of circumstances raised than the conflict resolution mechanism and decision-making system would have been managed either by Local Administration or by Police in the village. The local level grievance redressal mechanisms was managed by Police only.

The source of drinking water was ground water for the natives of rural area which was at a depth of 40-45 feet. The quality of water was very bad. The water was contaminated to an extent that even sometimes; water color was also changed. Yellow colored water along with a bad smell reached to the people for the drinking purpose. There was a turbidity in water. There was a need to improve the drinking water quality. Only 2% people obtained safe and clean drinking water. The condition of drainage system was pathetic. It was exposed and uncovered. There was a lack of proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, the conditions of public health and hygiene were meager. They had been facing numerous problems regarding health because of these circumstances for a long time. Majority of the population of the village had been suffering from Hypertension and Hepatitis disease due to drinking contaminated water.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community remained cooperative throughout the discussion. Flora, fauna, air and land of the nearby area will not be influenced. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All this scenario was observed during the site visit.

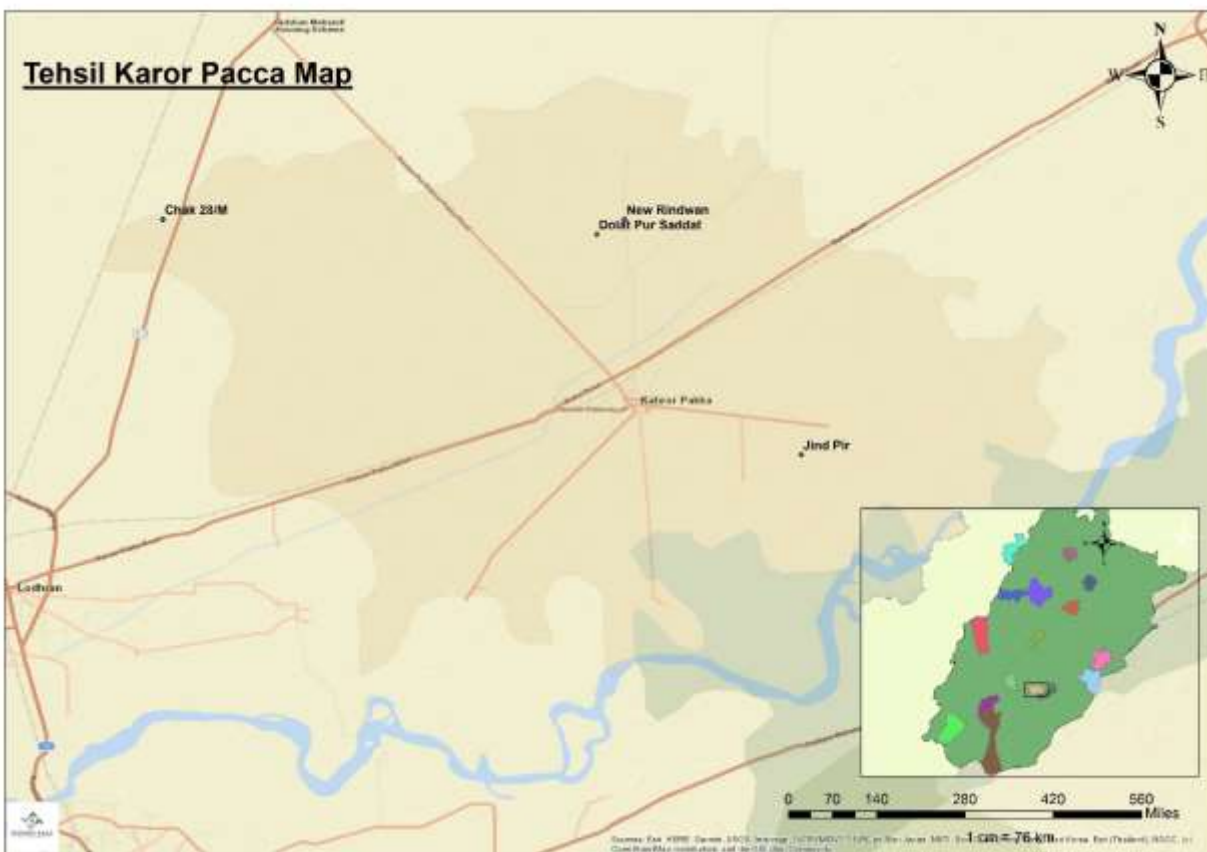
They stated that they had no issues about land contribution. Also the land was available in the community.

Tehsil, Karor Pacca - District, Lodhran

Karor Pakka is a tehsil of the Lodhran District of Punjab, Pakistan. It is located 27 kilometres east of the district capital of Lodhran. The Karor Pakka to Lodhran road (32 km) which is a major artery in Lodhran District, passes through the city. An old railway station established in 1925 is present in city on which

Trains for Lahore and Karachi stops. Dunyia Pur road is 25KM long road which is one of the straight roads in Pakistan. The city has a direct link with Mailsi (35 km) and Dunyapur (25 km). Multan and Bahawalpur are the nearest airports with international flights.

This particular tehsil has been chosen for the initiate of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people. Among all the villages, five settlements such as Chak No 229 JB, Warra Thatta, Chak No 155 JB, Darutta, and Muhammadi Sharif were selected in the tehsil, Bhawana to be assessed by our survey team. These villages were carefully chosen on the basis of particular set criteria which was comprised of uncultivated land, water resource and spontaneous population.



Sr.no	District	Tehsil	Villages	Characteristics
1	Lodhran	Karor Pacca	Dolat Pur Sadat	Small village with settled population
2			New Rindwan	Settled area
3			Jind Per	Uncultivated Land
4			Chak 28/M	Uncultivated Land

21. Profile Of Village Dolat Pur Sadat

The average land holding was 4 acres by the individuals and the number of household were 4,000 in the Dolat Pur Sadat. The type of settlement was semi-clustered. Usually, people lived in joint family system where every family comprised of at least 3-4 children. The household size varied between 6-7. There was no ethnic group and all the people were Muslim. The major sources of livelihood were Agriculture and other were Job holders. 90% people earned their livelihood by means of agricultural activities while rest of the 10% individuals were job holders. The average household income fluctuated between 10,000-20,000. The major crops were Wheat and Rice.

Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Numberdar System in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Numberdar and other influential members to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. Feudal system was seen there. It was common that one person hold all the land and rest of the people were working under his super vision. Moreover, he solved all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. And no one had the right to disobey him as everyone worked under his administration.



The source of potable water was underground water which was at the depth of 40 feet. People had stated that they felt an odour in the water. Sometimes, water color was also changed. People obtain Yellow colored water for the use of drinking. There was a need to improve the drinking water quality. The sanitation condition was poor as the existing sewerage system was open and people living nearby were not satisfied with this. They had to face many problems regarding health due to this situation. Flies and mosquitoes were common there and spread diseases among. There was no proper system of drainage and no water and sanitation service for the people.

During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. Equal participation of man and woman was ensured. The community was very cooperative. There will be no effects on species of the area during the project work.

The land was available in the community and also they were willing to donate the land for the project work.

22. Profile Of Village New Rindwan

The population of this village was 10,000. The average land holding was almost 3 acres by the individuals and the number of household were 500. The type of settlement was semi-clustered. Here, people lived as separate family. The household size was 6-7. All people were Muslim and no other ethnic group was found there. The major source of livelihood was Agriculture. 90% people earned their livelihood by means of

agricultural activities while rest of the 10% individuals were Labors. The average household income fluctuated between 8,000-10,000. Wheat was the major crop in the village.

Typically, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village.

The source of drinking water was ground water for the natives of rural area that was 60 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There was neither filtration plant nor wastewater treatment plant. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.



The females were specially at great risk due to drinking of polluted water. Unhygienic conditions posed huge impact on the health conditions of mothers and young girls. There was a major issue of open defecation. Due to this problem, the pregnant ladies and young girls particularly faced hardships because unclean conditions promoted infant's mortality in the rural areas. Flies and mosquitoes were common there and spread diseases among people. Diarrhea, Hepatitis and Cholera were some major diseases arising specifically in children.

During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. There were 8 males and 10 females were present from the community for the discussion on the project activities. The community remained very cooperative. They were willing to cooperate at the maximum during the tenure of project. Environmental Assessment depicts that there will be no effects on the species of nearby area. Moreover, there will be no negative impacts on the community land if project activities are started. Overall, maximum positive effects had been observed on the public during the site visit.

The land was available in the village and the villagers were also agreed to donate the land for the project work.

23. Profile Of Village Jind Pir

This village comprised of 38,000 populations. People lived in the houses which were in adjacent position along with the narrow streets. The type of the settlement was clustered. The average land holding was nearly 5 acres by the individuals. The number of household were 1,000-1,200. The household size was comprised 7 on average. No ethnic group was present; all people were Muslims. There main sources of livelihood included Agriculture, Job Holding and Labour aspects. 70% people earned their livelihood by means of agricultural activities and 10% people were job holder while rest of the 20% individuals were Labors. The average household income fluctuated between 10,000-15,000. The major crops found there were Cotton, Sugarcane and Rice.



Commonly, there was no dispute and violent conflict of water among the people but sometimes other issues may arise related to domestic violence and clashes on land. And, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by both through Panchayat System in this village. Also the local level grievance redressal mechanisms was managed by Panchayat. It was also the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects. They listened both parties and then punished the one against whom the evidences were presented. So, evidence based decisions were made here. Feudal system was present there. Everyone was bound to obey the particular person in decision-making matters.

The source of drinking water was ground water for the natives of rural area that was 120 feet in depth. People got water from tube-well. The quality of water was not satisfactory. The water was contaminated and even sometimes, water color was also changed. Yellowish colored water with a bad odor reached to people for the drinking purpose. There was a need to improve the drinking water quality. The drainage system was exposed and open. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, the conditions of public health and hygiene were meager.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The community remained cooperative enough. Flora and fauna of the nearby area will not be affected. Moreover, there were no negative impacts on the overall environment due to this project. All this scenario had been observed during the site visit.

The land of state was available in the village and people were also agreed to donate the land for the project work.

24. Profile Of Village Chak 28\M

This village comprised of 5,000 populations. The colonies were adjacent and the houses existed as semi-clustered type. The average land holding was almost 5 acres. Here, in this village the situation was different somehow. Most of the land was acquired by only one individual and rest of the people of entire village were dependent on the land of that specific person and, they worked under the supervision of that person. Hence, almost 70% people were landless. The number of household was nearly 2,000. The household size was 6-7 on average. Wheat was the major crop in the village. Three main sources of livelihood were found which included Agriculture, Job Holding and Labour aspects. 90% people earned their livelihood by means of agricultural activities and 10% people were Labors. The average household income fluctuated between 5,000-10,000. There was no ethnic group.



Normally, there were no dispute and violent conflict of water among the people. Additionally, the issue of domestic violence was also not found there. If such kind of circumstances raised than the conflict resolution mechanism and decision-making system would have been managed either by Numberdar or by Influential members in the village. There was no system to deal the local level grievance redressal mechanism in the village. The community itself dealt this system.

The source of drinking water was ground water for the natives of rural area which was at a depth of 45 feet. The quality of water was very bad. The water was contaminated to an extent that even sometimes; water color was also changed. Yellow colored water along with a bad smell reached to the people for the drinking purpose. The water was turbid. There was a need to improve the drinking water quality. Only 2% people obtained safe and clean drinking water. The condition of drainage system was pathetic. It was exposed and uncovered. There was a lack of proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community remained cooperative throughout the discussion. Flora, fauna, air and land of the nearby area will not be influenced. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All this scenario was observed during the site visit.

The land was available and they stated that they had no issues about land contribution if it would be purchased for the project use.

BHAWANA, CHINIOT

Bhawana is the sub-division of district Chiniot in Punjab, Pakistan. It was considered the part of Jhang district as the tehsil before February 2009. But, now it is included in Chiniot district as its capital. This particular tehsil has been chosen for the initiate of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people. Among all the villages, five settlements such as Chak No 229 JB, Warra Thatta, Chak No 155 JB, Darutta, and Muhammadi Sharif were selected in the tehsil, Bhawana to be assessed by our survey team. These villages were carefully chosen on the basis of particular set criteria which was comprised of uncultivated land, water resource and spontaneous population.

SR.NO	DISTRICT	TEHSIL	VILLAGES	CHARACTERISTICS
1	Chiniot	Bhawana	Chak184	Uncultivated Land
2			Warra Thatta	Spontaneous Population
3			Chak 240	Spontaneous Population
4			Darutta	Uncultivated Land
5			Muhammadi Sharif	Near Water Resource

The
4-5
and the
were

people
system

size

Moreover, female ratio was higher than males that was almost 60%. All the people were Muslim. There were two major sources of livelihood present one was Agriculture and other was Job holding. 50% people earned their livelihood by means of agricultural activities while rest of the 50% individuals were job holders. Minority of them were also related to the profession of Teaching and Army. The average household income fluctuated between 40-50K. The major crops were Wheat, Sugarcane and Rice. Sugarcane had been transported to the Ramzan Sugar Mills.

25. Profile Of Village Chak 240 Handlana (Maluka)

average land holding was acres by the individuals number of household 600 in the Chak 240 Handlana. Usually, lived in joint family where every family comprised of at least 3-4 children. The household varied between 10-15.



Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Numberdar in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Numberdar to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects.

The source of potable water was underground water which was at the depth of 150 meters. People had stated that they felt an odour in the water. Sometimes, water color was also changed. People obtain Yellow colored water for the use of drinking. Although, there had been fixed a filtration plant near Mosques but still the quality of water was not satisfactory. There was a need to improve the drinking water quality. The sanitation condition was poor as the existing sewerage system was open and people living nearby were not satisfied with this. They had to face many problems regarding health due to this situation. Flies and mosquitoes were common there and spread diseases among. There was no proper system of drainage and no water and sanitation service for the people.



During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. The community of Chak Sial 240 (Maluka) was very cooperative. They were willing to donate the land of the community for the use in the project. They had no issue regarding land donation. There were no effects on flora and fauna of the area. Moreover, no negative impacts of the projects had been observed during the site visit.

26. Profile Of Village Chak 184 (Jangloo)

The population of this village was 5000-6000. The average land holding was almost 3 acres by the individuals and the number of household was 350 in the Jhanglu. Here, people lived as separate family. The household size was 6. Moreover, female ratio was higher than males that was almost 50%. Males were in 40% ratio and probably 10% were children. Majority of the people was Muslim. The major source of livelihood was Agriculture. 70-80% people earned their livelihood by means of agricultural activities while rest of the 20% individuals were Labors. The average household income fluctuated between 15-20K. The major crops were Wheat, Sugarcane and Potato.

Typically, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by



the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village. Jatt, Araian, and Sipra are the casts of people yet they lived with harmony.

The source of drinking water was ground water for the natives of rural area that was 120-150 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There was neither filtration plant nor wastewater treatment plant. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. It passed throughout the village in that exposed way producing smell and destroying the aesthetic beauty of village. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.

They had to face many problems regarding health due to this situation. The females were specially at great risk due to drinking of polluted water. Unhygienic conditions posed huge impact on the health conditions of mothers and young girls. Pure water is a symbol of health and hygiene life. The pregnant ladies and young girls particularly faced hardships because of these scenarios because unclean conditions promoted infant's mortality in the rural areas. Flies and mosquitoes were common there and spread diseases among people. Diarrhea, Hepatitis and Cholera were some major diseases arising specifically in children.



During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. There were 6 males and 8 females were present from the community for the discussion on the project activities.

Sr No	GENDER	NUMBER
1	Male	6
2	Female	8

The community of Chak 182 (Jhanglu) remained very cooperative. They were willing to cooperate at the maximum during the tenure of project. They had no issue regarding land acquiring. Government land was available for the utilization of project activities. Environmental Assessment depicts that there were no effects on flora and fauna of the nearby area. Moreover, there will be no negative impacts on the community land if project activities are started. People had stated that their village was surrounded by many government drains. Overall, maximum positive effects had been observed on the public during the site visit.

27. Profile Of Village Muhammadi Sharif

This village comprised of 30,000-35,000 population. The population of this village was higher than the other rural areas. People lived in the houses which were in adjacent position along with the narrow streets.

The type of the settlement was semi-clustered. This village was flood affected area. There occurred a severe flood in 2014. Unfortunately, no reliefs were provided to them. The average land holding was nearly 4-5 acres by the individuals whereas 70% were still landless. As this village was populace therefore, the number of household was 3,000-3,500. The household size was comprised 8 on average. The number of females was more than males. 60% were children among them. There were three main sources of livelihood which included Agriculture, Job Holding and Labour aspects. 20-25% people earned their livelihood by means of agricultural activities and 5-10% people were job holder while rest of the individuals were Labors. The average household income fluctuated between 15-20K. The major crops found there were Sugarcane, Wheat and Rice.

This village had Agro-based community and all the Muslim festivals were celebrated due to cultural beliefs. Commonly, there was no dispute and violent conflict of water among the people but sometimes other issues may arise related to domestic violence and clashes on land. And, if such circumstances may arise then the conflict resolution mechanism and decision-making system was dealt by both through Panchayat System and Numberdar in this village. Although, the local level grievance redressal mechanisms was managed by Panchayat only. But, overall that was the responsibility of Panchayat and Numberdar to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects. They listened both parties and then punished the one against whom the evidences were presented. So, evidence based decisions were made here.

The source of drinking water was ground water for the natives of rural area that was 120-150 feet in depth. People got water from tube-well. The quality of water was not satisfactory. The water was contaminated and even sometimes, water color was also changed. Yellowish colored water with a bad odor reached to people for the drinking purpose. One operational filtration plant had been set for the community but that was not enough to fulfill the requirement of population. There was a need to improve the drinking water quality. The major cause of water pollution was the wastewater impending from Ramzan Sugar Mills. That industry was established in 1993 and since then it had become a major cause of contamination of nearby water source as it released the effluents directly in the nearby water sources.





The drainage system was exposed and open. Every house had arranged their own separate sanitation system in the vicinity of their homes in Muhammadi Sharif Village. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, the conditions of public health and hygiene were meager. They faced numerous problems regarding health because of these circumstances. The females were especially at great risk due to drinking polluted water. Unhygienic conditions posed huge impact on the health conditions of mothers and young girls. Flies and mosquitoes were common and spreading diseases among people during summers and monsoon. 50% population of the village of Muhammadi Sharif had been suffering from Hepatitis disease due to drinking contaminated water.



Individual interviews and Focused Group Discussion (FGD) were held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The community of Muhammadi Sharif remained cooperative enough. They had no issues regarding land donation. Moreover, there were no negative impacts on the overall environment due to this project. All this scenario had been observed during the site visit.

28. Profile Of Village Darutta

The village comprised of 1000 households and the population was around 15000. The colonies were attached and the houses existed as clustered type. The average land holding was almost 5 acres. Here, in this village the situation was different somehow. Most of the land was acquired by only one individual and rest of the people of entire village were dependent on the land of that specific person and, they worked under the supervision of that person. Hence, almost 70% people were landless and they worked as daily wage laborers on the lands of jageerdar.

The household size was 7 on average. The number of females and children were 5,000 whereas males were 7,000 in number. It is agro dependent village, the major crops grown were Sugarcane, Rice and Wheat. Three main sources of livelihood were found which included Agriculture, Job Holding and Labour in fields, brick kilns and sugar mills 30% people earned their livelihood by means of agricultural activities and 60% people were Labors including women along with the man. While 5% of the individuals were Job Holders. The average household income fluctuated between 10,000 -15,000.

No ethnic group was found in the village and 100 % of population was Muslim and people celebrated all the Muslim festivals due to cultural beliefs. Normally, there were no dispute and violent conflict of water among the people neither any case of domestic violence was reported by community. If such kind of circumstances raised than the conflict resolution mechanism and decision-making system would have been managed either by Numberdar or by Panchayat System in this village. If these relevant persons were not available on the spot in the village, then either the close relative of Numberdar or Respectable person in the entire village dealt all the concerned matters.

The local level grievance redressal mechanisms was managed by Numberdar. But, sometimes the decision made by the MNA were considered the final decision as well. Overall, Panchayat, Numberdar, MNA, Close relative of Numberdar and Respectable person of the village were accountable to solve all the disputes in the entire village which were related to family disputes, Biradaries and Religious Sects. The major casts of this village were Sheikh, Kharl, and Joiya. Currently, only 2 primary schools for girls and boys existed in this village, the higher secondary school is not available in the village and the youth has to face a lot of inconvenience if they want to go for higher studies. There was a need to introduce higher schools for both girls and boys. The villagers complained about a government owned land which they were using as playground is now occupied by some group.



The source of drinking water was ground water for the natives of rural area. The quality of water was very bad, the water was contaminated to an extent that even sometimes; water color was also changed. Yellow



colored
water
along
with a
bad smell
reached
to the
people
for the
drinking
purpose.

There was a turbidity in water. There was a need to improve the drinking water quality. Only 2% people obtained safe and clean drinking water. One of the major source of water pollution was the wastewater releasing from the Ramzan Sugar Mills which was at the distance of 1km from this village. It was established in 1993 near this village. Although farmers got many benefits due to the introduction of this manufacturing unit yet it had become a major cause of contamination of nearby water source as it released the untreated effluents directly in the nearby water sources. Due to this activity, the quality of groundwater was disturbed and installation of Sugar Mills had become a matter of concern for the villagers. Canal water had been utilized to irrigate about 10-12 acres' land.

The condition of drainage system was pathetic, it was exposed and uncovered. The waste water from households was diverted to a common area in middle of village which was like home to diseases and open defecation was also observed in the village because of lack of awareness among community. Every house had arranged their own separate Tube well in the vicinity of their homes in Darutta Village. There was a lack of proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, the conditions of public health and hygiene were meager. They had been facing numerous problems regarding health because of these circumstances for a long time. Majority of the population of the village had been suffering from Hypertension and Hepatitis disease due to drinking contaminated water.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community of Darutta remained cooperative throughout the discussion. They stated that they had no issues about land contribution. There was the availability of 4-acre government land near Ramzan Sugar Mills.

29. Profile Of Village Warra Thatta

This village comprised of 15,000-20,000 population. The colonies were dispersed. The average land holding was almost 3 acres. Most of the land was acquired by only one individual and rest of the people of entire village were dependent on the land of that specific person and, they worked under the supervision of that person. Hence, almost 98% people were landless. The number of household was nearly 1000. The household size was 8 on average. The number of females and children were 10,000 whereas males were 8,000 in number. Females were dominant in ratio than males in village Warra Thatta. The major crops were Sugarcane, Rice, Watermelon and Wheat. The major sources of livelihood were Agriculture, Job Holding and Labour aspects. 20% people earned their livelihood by means of agricultural activities and 60% people were Labors. While 10% of the individuals were Job Holders and rest of the 10% people were Landowners. The average household income was less approximately 7,000.

There was no dispute and violent conflict of water among the people. If such kind of circumstances raised than the conflict resolution mechanism and decision-making system would have been managed either by Panchayat System in this village. The local level grievance redressal mechanisms was managed by Panchayat.

The source of drinking water was ground water for the villagers. The quality of water was very poor. The water was contaminated to an extent that even sometimes; water color was also changed. Yellow colored water along with a bad smell reached to the people. There was a turbidity in water. There was a need to improve the drinking water quality. The condition of drainage system was pathetic. It was exposed and uncovered. Thus, the conditions of public health and hygiene were meager. They had been

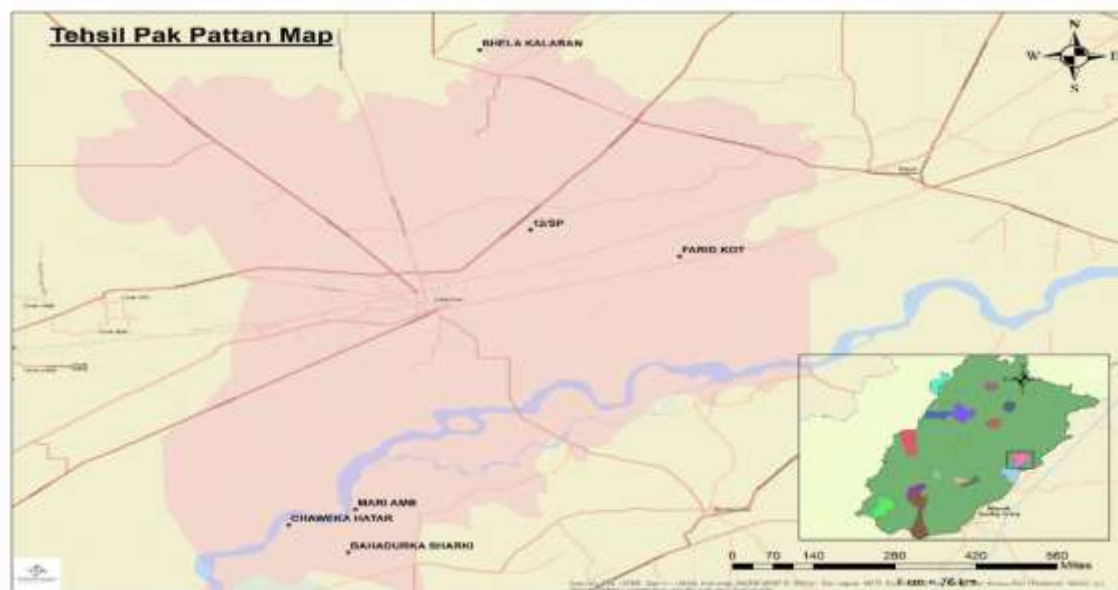


facing numerous problems regarding health because of these circumstances for a long time. Hepatitis was common among them.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community remained cooperative throughout the discussion. They had no issues about land contribution. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All this scenario was observed during the site visit.

TEHSIL PAKPATTAN, DISTRICT PAKPATTAN

Pakpattan Tehsil, is an administrative subdivision of Pakpattan District in the Punjab province of Pakistan. The city of Pakpattan is the headquarters of the tehsil which is administratively subdivided into 5 Union Councils. PakPattan is one of 16 Tehsils selected by Punjab government for Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are inadequate in the villages, moreover, a huge issue of water supply and service is faced by the native people. Four villages of tehsil Pakpattan were selected for impact analysis by ESMF team.



Sr.No	DISTRICT	TEHSIL	VILLAGES	CHARACTERISTICS
1.	PAKPATTAN	PAKPATTAN	SP-12	Quality of underground water
2.			Farid Kot,	Established and Populated village
3.			Bela Kalaran	spontaneous population
4.			Mari Amb	Quality of underground water

30. Profile Of Village SP-12

Chak SP 12 is a semi clustered village covered by green agricultural fields, the population of village is around 7000, with average household size 7. Most of the land is owned by 10 % of total population, 10% of population is involved in various businesses and rest of 80% population is landless and they work for landlords as daily wage laborers. The livelihood sources in village are: agriculture, labors, and job holders. The major grown in the village are: wheat, maize, till and potatoes. Some people also grow dates as well.

No minority or ethnic group was found in the village during discussion with local community during survey. All religious festivals and events are celebrated in the village.

Major source of water is ground water, as per discussion with community the quality of water is not suitable for consumption and responsible for various diseases. Some of families who can afford have installed filters but rest of villagers are suffering from various diseases.

Two separate focus group discussion meetings were conducted for both genders in the village. During discussion it was observed that the village has its own grievance redressal mechanism and run by the influential people like numberdar.

The open sanitation system has been observed in the village and the household waste is collected in pit holes before discharging it into agricultural fields.

Focused Group Discussion (FGD) was held in the village, during the discussion it was revealed that the community is not satisfied with the open sanitation system as open sanitation system results in unpleasant smell and causes various diseases among children especially.

The village influential group ensured the ESMF team that they will donate the land for the project and will cooperate throughout project period. And there is government land available as well which can be used for project interventions.



31. Profile Of Village Farid Kot

Kot Farid is a clustered village with a canal with population around 9000. The major source of livelihood includes agriculture, 80% of the population work as daily wage labor for the 10% of population who own the whole village and rest of 10% are involved in other activities like small business, armed forces and public servants. The major crops grown in village are: wheat maize, potatoes and rice. Average landholding of the village is 10-12 acres and average monthly income is around 20 thousand per month.

During survey the overall condition of village seems satisfactory in terms of cleanliness, it was only village in whole central Punjab having closed sanitation system, a pit hole is built for each house to collect the household waste water and when it starts to overflow female members of family were supposed to empty the pit hole and sprinkle the waste water in street which dry with passage of time of just evaporates.



Major biradaries found to be living in village are: Watto, Bhatti, Kamboh, Jutts etc. There was no dispute and violent conflict of water among the people. If such kind of circumstances raised than the conflict resolution mechanism and decision-making system was managed by dominant biradaries/Panchayat system of this village. If Panchayat fails to handle the matters, then it moves in the court.

The source of drinking water was ground water for them which was 100-125 feet in depth. The quality of water was not good, it has unpleasant odor and it turns yellow if kept in ant container for some time. Due to this contaminated water, Hepatitis C disease was prevailing in the people living there.



Of
Bhela



32. Profile
Village
Kalaran

This village comprised of 5000-6000 population. There were dispersed colonies. The average land holding was almost 4-5 acres. Most of the people were landless because majority of the land was acquired by few landowners. Hence, almost 70% people were landless. The number of household was nearly 600. The household size was 7-8 on average. The major crops were Sugarcane, Rice, and Wheat. Agriculture is major source of livelihood in whole village as the land is owned by 10% of population while 90% of village work as daily wage laborers in fields, brick kilns. Fish farming was also common in the village. Average landholding of villagers is 4-5 acres whereas average monthly income as per discussion with villagers in 7000-1000.

The biradaries living in village are: Watto, Jutt, Arayain, Chenoy, Khari. During discussion and interviews it was observed that some disputes were occurred in village related to water which was resolved by panchayat system.

Underground water is consumed for daily use and it is reported to be unfit for human consumption, it is saline in nature and physical appearance is yellow in color.



Sewerage system is open and no proper infrastructure was found, sewerage waste water is disposed off into streets which is ultimately used for irrigation purpose. Thus, the conditions of public health and hygiene were miserable. The villagers had been facing severe diseases due to wretched sanitation system and among diseases hepatitis was common.

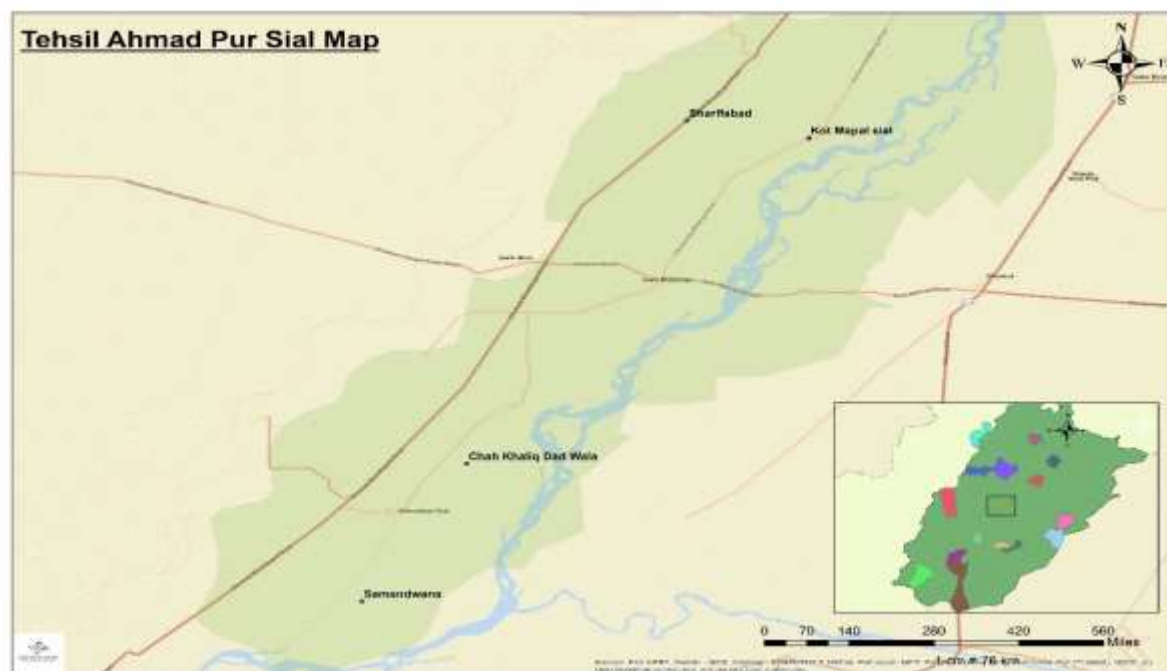
Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The community remained cooperative throughout the discussion. They had no issues about land contribution. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project.

The community remained cooperative and ensured ESMF team to donate land for the project.

Tehsil Ahmedpur Sial, District Jhang

Tehsil Ahmedpur Sial is Ahmad Pur Sial was a sub tehsil of Shorkot after devolution in year 2001 and thereafter it was given the status of TMA in year 2003. It is having a total of thirteen (13) unioncouncils including two (2) in urban areas. The town has fertile lands due to Rang Pur Canal passing on north-west of the town. Cash crops like sugar cane, rice, cotton and wheat are grown over here. Adequate quantity of potable ground water is available in the area. Ground water drawn through deep tube well is the present source of water supply. The depth of water table is 15-20 feet. Less than 10% of the total population is served with piped water supply.

Tehsil Ahmedpur Sial is one of 16 tehsils selected for implementation of project Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) for clean water supply and to improve sanitation infrastructure of the tehsil. Four villages of tehsil were selected for impact analysis by ESMF team.



Sr.No	DISTRICT	TEHSIL	VILLAGES	CHARACTERISTICS
1.			Kot Mahal Sial	Near water body

2.	JHANG	AHMEDPUR SIAL	132 Chak	Along main road
3.			Sharifabad	Spontaneous population
4.				

33. Profile Of Village Kot Maple Sial

Kot Mapal Sial Chak is a semi clustered village covered by green agricultural fields, the population of village is around 8000, with average household size 7-8. Most of the villagers don't own land and the land is owned by 30% of the whole population while rest of 70 % work and labors and a very small number of people work as government employees in various government organizations. Average land ownership of landlords is 15-20 acres and average monthly salary of households is 15 thousands. The major grown in the village are: wheat, sugarcane and rice.

No minority or ethnic group was found in the village during discussion with local community during survey. All religious festivals and events are celebrated in the village including melad and eid.

Major source of water is ground water, as per discussion with community the quality of water is not suitable for consumption and responsible for various diseases. Some of families have installed filters at their homes while rest of families have no option but to consume contaminated water.

Some of biradaries living in area are: Sial, Kalaran, Lak, Hassala, Nehry etc. it is reported by the community during focus group discussion that there was a dispute on water related issue (on canal water) around 10-15 years ago which was resolved by panchayat.

The open sanitation system has been observed in the village and the household waste water is discharged into agricultural fields for irrigation. Focused Group Discussion (FGD) was held in the village, during the discussion it was revealed that the community is not satisfied with the open sanitation system as open sanitation system results in unpleasant smell and causes various diseases among children especially.

The village influential group ensured the ESMF team that they will donate the land for the project as the community has already donated land for government led welfare projects for betterment of community.



34. Profile Of Village Sharifabad

Sharifabad is a village of tehsil ahmedapur sial with dispersed population of 27000 people and average household size of village is around 10 people. The major source of livelihood includes agriculture, 80% of villagers hold land while only 20% are landless are involved in other activities like small business, armed forces and public servants. The major crops grown in village are: wheat maize, cotton and rice. Average landholding of the village is 8-10 acres and average monthly income is around 20-25 thousand per month. Open sanitation system was present and the source of water was ground water which was available on 40ft. The community was not satisfied with the water quality according to them it turns yellow and has unpleasant smell.

There was a minority group living in the village, 10% of population comprised of Christians while 90% were muslims. Major biradaries found to be living in village are: Sial, Baloch, Bhatti and Arayain. There was no dispute and violent conflict of water among the people. If such kind of circumstances raised than the conflict resolution mechanism and decision-making system was managed by dominant biradaries/Panchayat system of this village. If Panchayat fails to handle the matters, then it is taken to police and court.

The community was willing to cooperate with the project team for implementation of the project. And they believe that the project activities will bring positive change in the village and does not imply any negative impact.

35. Profile of chak 13l

Chak 13 L is a clustered hamlet with population 3000-4000. The average land holding was almost 3-4 acres. Major sources of livelihood were agriculture, labors and jobs. The major crops were Sugarcane, Rice, and Wheat. Agriculture is major source of livelihood in whole village, 60 % of the population own land while 40 % of the villagers don't have any land and they work as labors of landlords or work in service sectors. The biradaries living in village are: Naol, Jaman, Sial, Pattan, syed etc. During discussion and interviews it was observed that no disputes were occurred in village related to water and anything like this happens the panchayat system resolves the matter while considering the points of both parties. Water quality was not good for human consumption so an NGO (LPP) has installed a filtration plant for this settlement. Underground water is accessible on depth of 120 feet. Both underground water and sanitation waste water from households is being consumed for irrigation purposes. Each family has installed tube well to irrigate their crops.

Sewerage system is open and no proper infrastructure was found, sewerage waste water is disposed off into streets which is ultimately used for irrigation purpose. Thus, the conditions of public health and hygiene were miserable. The villagers had been facing severe diseases due to wretched sanitation system and among diseases hepatitis was common.

The community remained cooperative throughout the discussion. They had no issues about land contribution.

Profile of Samandwala:

Samandwala is a semi-clustered with population 1,300. Usually, people lived in joint families and the average household size was 6-7 members. The average land holding was almost 2-3 acres. Major sources of livelihood were labors, agriculture and jobs. The major crops were Cotton, Sugarcane, and Wheat. Agriculture is major source of livelihood in whole village. The average household income was 10,000-15,000 monthly.

No ethnic group was found there during the discussion and survey. All people were Muslims. They celebrated all the Muslim festivals and events.



The source of water was underground water with the depth of 120 ft. The quality was too bad as stated by people. They felt a bad odor and yellow colored water for drinking water. The waste water of the houses was being disposed in the streets. The sanitation system was exposed.

The community of Samandwala remained cooperative during the discussion. It came to know that the local grievance mechanism was dealt by Panchayat System. Moreover, they seem to be cooperative towards project and panchayat system will discuss the matter of land donation for project intervention and will inform the team later.

36. Profile Of Village Mari AMB

Marri Amb is a hamlet with population 3000-4000, located just 2 km from river Sutlej. The total number of households in village is around 300 with average HH size 8-9. Out of the whole population the land (approx. 400 acres) is owned by a land lord "Peer Nazim Chishti" and the whole village works under these landlords. Strong feudal system prevails in the village and basic rights of the common people are crushed by the feudal lords. 99% of population work as labors for landlords and nearby brick kilns while rest of 1 % avail the hard by the labors. Major crops of the village are: wheat, corn, potatoes and rice. Average monthly income of household is 12-15 thousand Rupees.

No minority or ethnic group was found in the village during discussion with local community during survey. All religious festivals and events are celebrated in the village.

Major source of water is ground water, as per discussion with community the water is unfit for human consumption as it is yellow in color and has bad and unpleasant odor. The village dumps the solid and liquid waste in the drain "Rajwah" which flows in the middle of the village.

The sanitation system is open in whole village except the landlords they had proper sanitation infrastructure. A few biradaris live in the village which includes: Chishti, Sheikh and Arayain. During discussion it was observed that the village has its own grievance redressal mechanism and run by the peer of Mari Amb. The village influential group ensured the ESMF team that they will donate the land for the project and will cooperate throughout project period.

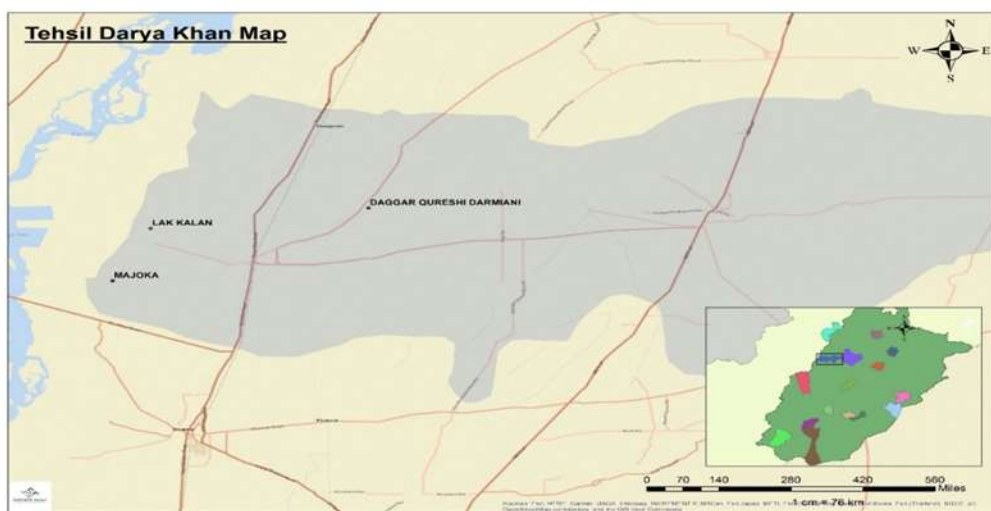


Sr.no	District	Tehsil	Villages	Characteristics
1	Bhakkar	Darya Khan	Daggar Qureshi	Along canal water
2			Lak Kalan	Established water

3		Majoka	Along canal water
---	--	--------	-------------------

Tehsil Darya Khan, District Bhakkar

Darya Khan, is a town in Bhakkar District in the Punjab Province of Pakistan. The town is the headquarters of Darya Khan Tehsil. This particular tehsil has been chosen for the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are inadequate in the villages, moreover, a huge issue of water supply and service is faced by the native people. Among all the villages, three settlements such as Daggar Qureshi, Lak Kalan and Majoka were selected in the tehsil Darya Khan to be assessed by our survey team. These villages were carefully chosen on the basis of particular set criteria which was comprised of uncultivated land, water resource and spontaneous population.



37. Profile Of Village Daggar Qureshi Darmiani

This village comprised of 10,000-11,000 population with dispersed colonies. Qureshi family was dominant family owning 70% of village's land, rest of the villagers were landless and work as daily wage laborers for Qureshis. The number of household was nearly 1000. The household size was 8-9 on average. Males and females were equal in ratio there. The major crops were Sugarcane, Rice, and Wheat. Agriculture, Job Holding and Labor aspects were sources of livelihood. 70% people earned their livelihood by means of agricultural activities and 30% people were Labors but they were indirectly dependent on agriculture as they work on lands of the Qureshis. The average household income was less approximately 15-20,000.

There was no minority group found in village during survey by ESMF team, and the villagers shared that they celebrate all religious events. No dispute or conflict was reported as per the community, if anything happens the Panchayat system resolves issues after hearing the points of both conflicting parties.

The source of drinking water was ground water for the villagers. The quality of water was satisfactory. The condition of drainage system was pitiable. It was open and people disposed of their waste in the streets. The sewerage system was not proper. Thus, the conditions of public health and hygiene were meager. They had been facing severe diseases due to wretched sanitation system and among diseases hepatitis was common.

Focused Group Discussion (FGD) was held in the village, during the discussion it was revealed that the community is good with the drinking water quality but not satisfied with the open sanitation system. As per observation there was no flora or fauna which can be impacted by project activities. Although the community leaders raised this concerned that the project execution must be done after harvest season so that their crops got get damaged during any constriction work

The village influential group ensured the ESMF team that they will donate the land for the project and will cooperate throughout project period.

38. Profile Of Village Lak Kalaran

This village comprised of 10,000-15,000 population. There were scattered colonies. The average land holding was almost 10 acres. The number of household was nearly 2500-3000. The household size was 8 on average. The population of female members was more than males. The major cash crops were Rice, Sugarcane, Maize, Pulses, Sarson and Wheat. Most of the villagers rely on Agriculture for livelihood but some people also affiliated with government jobs and laborers in brick kiln and agricultural fields. 30% people owned lands, 60% of overall population works on agricultural land as laborers and brick kilns while 10% were job holders. The average household income was around 15000 per month.

100% of population living in the village were Muslims, they celebrated all religious festivals and events. The community was conservative regarding women rights. During discussion it was found that the upper class of the village use practice horse riding and others play volley ball.

There was no dispute and violent conflict of water among the people. If such kind of circumstances raised than the conflict resolution mechanism and decision-making system was managed by dominant biradaris/Panchayat system of this village. If Panchayat fails to handle the matters, then it moves in the court.

The source of drinking water was ground water for them which was 120-130 feet in depth. The quality of water was satisfactory overall but sometimes yellowish and smelly water reached to the community. Due to this contaminated water, Hepatitis C disease was prevailing in the people living there. The condition of drainage system was dreadful, the waste water from households was directed to agricultural fields which contaminates the crops.



Two different focus groups were conducted for women and men, during Focus Group Discussion it was observed that the community uses clean water for the kitchen gardens vegetables which they consume for their household and the sanitation water is used for irrigation of crops which are grown for commercial purposes.

39. Profile Of Village Majoka

The village is prone to flood with population of 10,000-11,000. The average land holding was almost 15 acres but most of the people were landless because majority of the land was acquired by few landowners. Hence, almost 70% people were landless. The number of household was nearly 1000. The household size was 9-10 on average. Males and females were equal in ratio there. The major crops were Sugarcane, Rice, and Wheat. Agriculture, Job Holding and Labour aspects were sources of livelihood. 70% people earned their livelihood by means of agricultural activities and 30% people were Labors. While minority were Job Holders. The average household income was less approximately 15-20,000.

During survey and discussion it was observed that the village is totally comprised of muslim community and all religious festivals are celebrated with religious zeal. No dispute reported about any violence and water issues. The panchayat system is effective in the village to resolve such disputes.



The major source of drinking water was ground water and the quality was better comparatively but the sanitation system worse, sanitation system was open and the sanitation waste is discharged into village fields for irrigation. The contaminated water from sanitation system is entered into food chain and is causing various diseases among children and pregnant women. Hepatitis is also common in village.

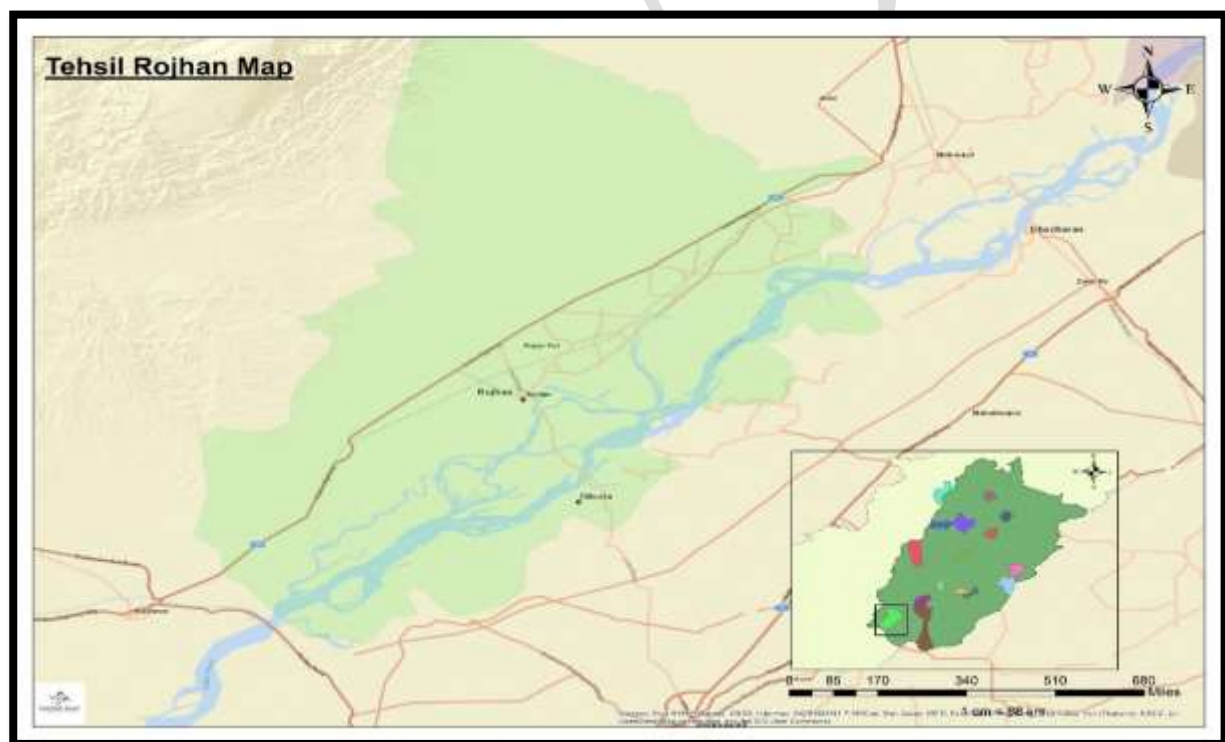
Two separate Focused Group Discussion (FGD) were held for both genders to discover the overall scenario and in-depth information of the existing circumstances during the surveys.

The community was not cooperative and they are not willing to cooperate with land acquisition for the project.

Tehsil Rojhan - District, Rajanpur

Rojhan is situated in District Rajanpur of Punjab near the inter-provincial borders of Baluchistan, Sindh and Punjab. This city is the Capital Seat of the Mazari Baloch Tribe who has held this territory since 1632 A.D. Prior to this the Mazari Tribe was settled in the Bambhore Hills of present day Kahan in Baluchistan. It is located at 28°16'N, 68°16'E. Rojhan is spread over a large area and is connected by road and railway to Kashmore in the South-West and Rajanpur in the North-West.

This tehsil has been chosen for the initiate of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people. Two settlements named; Rojhan and Dil Kushah were selected among all to be assessed by our team. These villages were carefully chosen on the basis of particular criteria which were flood prone area and near water resource.



Sr.No	District	Tehsil	Villages	Characteristics
1	Rajanpur	Rojhan	Rojhan	Flood prone area
2			Dil Kushah	Near water resource

40. Village Rojhan

The average land holding was 2-3 acres and the number of household were 6,000 in Village Rojhan. The colonies were attached and the type of settlement was clustered type in Katcha Pacca pattern. Usually, people lived as separate family system so, the household size varied between 6-7 members per house. Total population of the village was 38,000 altogether. All the people were Muslims and no ethnic group was found there. The major sources of livelihood were Agriculture, Government Jobs and Labor work. Almost 80% people worked in fields, 10% individuals were labors and remaining 10% were holding Government Job. The average household income fluctuated between 10-15K. The major crops were Wheat, Sugarcane, Onion and Rice.



Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat in village Rojhan. But, there was no specific management for the local level grievance redressal mechanisms and to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects.

The source of potable water was ground water which had a depth of 60 feet. People shared that they felt smell in potable water. Sometimes, water color was also changed. People obtained Yellow colored water for the drinking purpose. There was even not a single filtration plant. The condition of sanitation system was very pathetic as the existing scheme was exposed and uncovered. Villagers had to face many health issues due to this situation. Insects, Flies and Mosquitoes were common and spreading diseases among people. One more major cause of health problems was open defecation there. Thus, these conditions illustrated that there were no proper water and sanitation services for the contiguous people and it was intensely needed to introduce appropriate sewage system to promote hygienic environment.

During the site visit, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. The community of village Rojhan remained very cooperative throughout discussion. There will be no effects on species of the nearby area due to project activities. Instead, the project will pose positive impacts on the overall community.

They were agreed to donate the land of the community for project use. They had no issue regarding land donation.

41. Village Dil Kushah

The population of village Dil Kushah was comprised of 12,000 on average. The type of the settlement was semi-clustered and people lived at an adjacent distance from one another. The average land holding was 4 acres and the number of household were 4,000 in Dil Kushah village. The household size varied between 6-7 members per house. All the people were Muslims and no ethnic group was found there. The major sources of livelihood were Agriculture, Private Jobs and own business. The average household income was 15K. The major crops were Wheat, Rice and vegetables.

Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat in village Rojhan. If the matter is of severe nature and Panchayat fails to deal the case, then it moved to the police station. But, there was no specific management for the local level grievance redressal mechanisms and to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects.

The source of potable water was underground water which had a depth of 150 feet. Water was supplied to people through tube well and hand pumps. People told about the quality of potable water and the water was yellowish and smelly. Not even a single filtration plant was observed there. The condition of sanitation system was also very wretched. The existing scheme was improper and open. Villagers faced many health issues due to this situation. Insects, Flies and Mosquitoes were common and spreading diseases among people. One more major cause of health problems was open defecation there. Thus, these conditions illustrated that there were no proper water and sanitation services for the contiguous people and it was intensely needed to introduce appropriate sewage system to promote hygienic environment.

During the site visit, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. The community of village Rojhan remained very cooperative throughout discussion. There will be no effects on species of nearby area due to project work. Instead, the project will pose positive impacts on the overall community.

They were agreed to donate the land of the community for the project use only on Purchase. In that case, they had no issue regarding land donation.

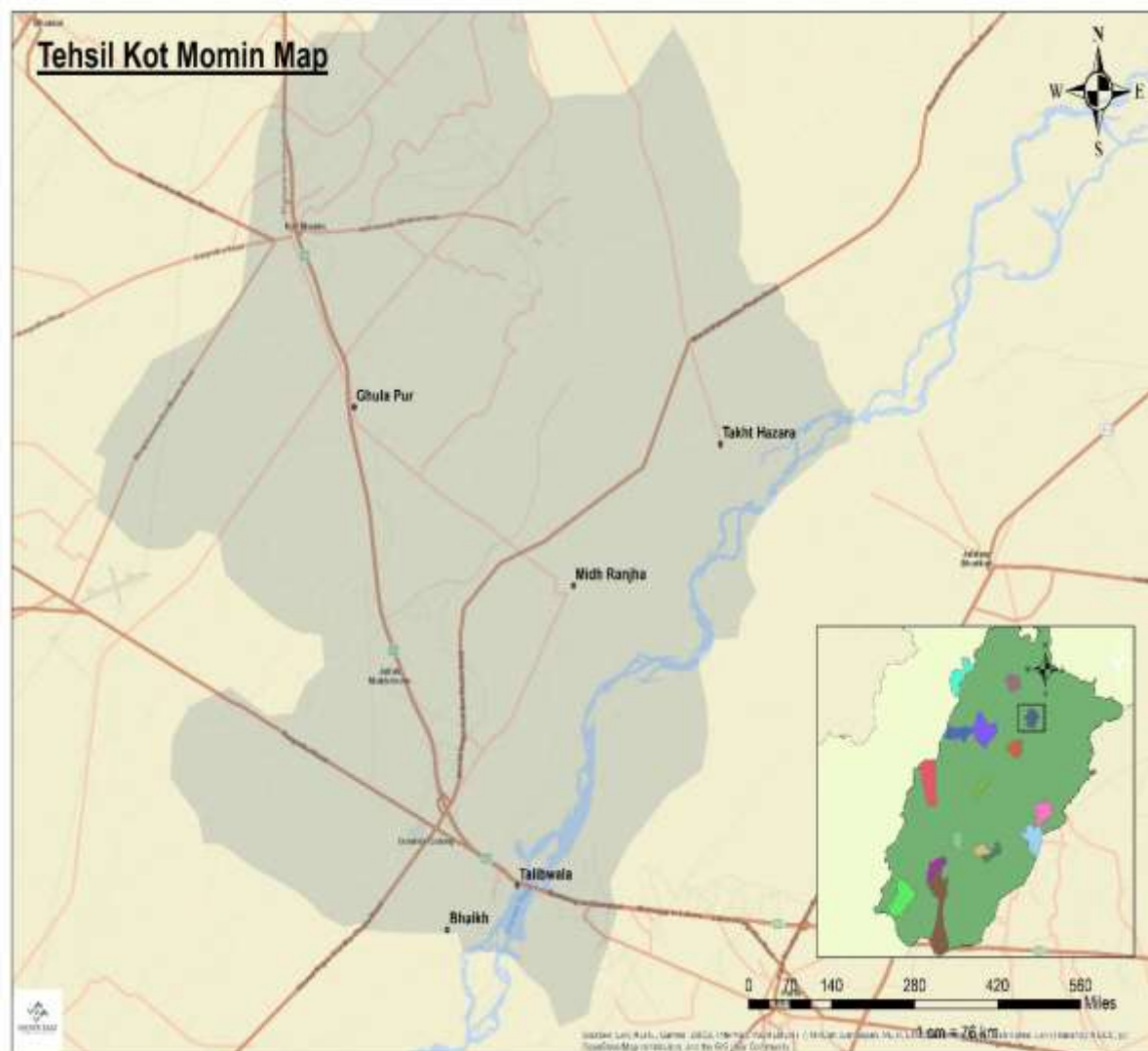


DISTRICT SARGODHA, TEHSIL KOT MOMIN

Kot Momin is a town and Tehsil headquarters in Sargodha district, Punjab, Pakistan. Kot Momin is almost 40 Km away from Sargodha city. This place is most famous for citrus fruit (Kinno, Malta etc.) After that day it is recognized as Kot Momin Tehsil of Sargodha district. Kot Momin is situated among various historical cities.

This tehsil has been chosen for the initiate of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people. Five settlements named; Baikh, Takht Hazara, Gula Pur, Talib Wala and Mindh

Ranjha were selected among all to be assessed by our team. These villages were carefully chosen on the basis of particular criteria which were flood prone area and near water resource.



Sr.No	District	Tehsil	Villages	Characteristics
1	Sargodha	Kot Momin	Baikh	Flooded area
2			Takht Hazara	Village near uncultivated land
3			Gula Pur	Spontaneous population
4			Talibwala	Spontaneous population, Flooded area
5			Mind Ranjha	Settled area with uncultivated land

43. Village Mind Ranjha

The population of village was comprised of 10,000 people on average. The type of the settlement was semi-clustered and colonies were adjacent. The average land holding was that 50 percent people were having personal property and the number of household were 1,500-2,000 in the village. The household size was consisted of 6-7 members per house. All the people were Muslims and their major castes were Midhana Baradri. The major sources of livelihood were Agriculture, Land lording, Shop keeping, taxi driving and Labour. The average household income fluctuated between 40,000-50,000. The major crops were Wheat, Kamad and Sugarcane. The local people were living in Katchi Abadis.



Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in village. But, there was no specific management for the local level grievance redressal mechanisms and to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. Feudal System was present and people were satisfied on this system.

The source of water was hand pumps. People stated that the quality of potable water was extremely bad as the water was contaminated, the water was smelly with salty taste coming from wells and hand pumps. The condition of sanitation system was also very useless. There was no any sewerage system. The community was facing sewerage types of disputes. There was Nehri Nizam in the village. Villagers faced many health issues due to this situation. Thus, these conditions illustrated that there were no proper water and sanitation services for the people and it was intensely needed to introduce appropriate sewage system and recuperation of pipelines, naalas and water tanks should also be endorsed.



During the survey, Focused Group Discussion (FGD) was held in the village to discover the overall scenario and in-depth information of the existing circumstances. Moreover, the views on the project and land donation were also noted. The community of the village was very supportive and willing throughout

discussion. There will be no effects on species of nearby area. Instead, the project will pose positive impacts on the overall community.

The land was available and the community was agreed to donate the land as well for the project use but they also showed their concerns by stating that it might be possible that any landlord or powerful ethnic group may try to stop the project activities.

44. Village Takht Hazara

The average land holding was 10 to 15 acres by the individuals and the number of household were 638. Total population was 4,073. Usually, people lived in joint family system where every family comprised of at least 3-4 children. The household size varied between 10-15. Moreover, female ratio was higher than males that was almost 60%. All the people were Muslim. Agriculture and labour was the major source of living over there. No any industry was there. The average household income was 600 to 700 RS. Daily wages. The major crops were Wheat, Kamad, rice and channa. During focus group discussion the local people stated that there village was flood prone and due to frequent floods, they remain at loss all the time. There was no any irrigation system by canals and lakes. Water quality is so bad. There should be water tabs and tube wells in their village. No sewerage system. The local community suggested 1500 feet deep naala should be constructed in the village.



Usually, there was no dispute and violent conflict of water among the people of village because every person of the village had their own nalkaas. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Numberdar in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Numberdar to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. People of nearby village do fight with each other on water issues but people by themselves resolved their issues.

The source of drinking water was hand pumps for the natives of rural area that was 60 to 65 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There was neither filtration plant nor wastewater treatment plant. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. It passed throughout the village in that exposed way producing smell and destroying the aesthetic beauty of village. There was no proper system of drainage, potable clean drinking water and sanitation service for the people.



During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. The community was very cooperative. They were willing to donate the land of the community for the use in the project. They had no issue regarding land donation. There were no effects on flora and fauna of the area. Moreover, no negative impacts of the projects had been observed during the site visit.

45. Talib Wala

The population of village was comprised of more than 2,894 with average household of 481. The type of the settlement was semi-clustered as colonies were adjacent. The average land holding was 4 acres and the number of household were 2,000. The household size was consisted of 6 members per house. All the people were Muslims and no ethnic group was found there. The major sources of livelihood were Agriculture, Labors and Private Jobs. The average household income was almost 10 to 15K. The major crops were Wheat, Rice (Munjji) and Sugarcane (Kamad). Average land holding was 4 to 10 killa.



Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in the village. Moreover, it was also responsible for the management of local level

grievance redressal mechanisms and to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. People were satisfied with this system.

The source of water was ground water which was at the depth of 120 feet. People pointed out that the quality of potable water was not suitable and the water was smelly and saline with salty taste. The condition of sanitation system was also poor and pathetic. The existing scheme was exposed. Villagers faced numerous health and Hepatitis C was observed in numerous people. Thus, these conditions illustrated that there were no proper water and sanitation services for the people and it was intensely needed to introduce those facilities appropriately.



During the survey, Focused Group Discussion (FGD) was held in the village to discover the overall scenario and in-depth information of the existing circumstances. Equal participation of both genders was ensured in the discussion. Moreover, the views on the project and land donation were also noted. The community of village remained supportive and willing throughout discussion. There will be no effects on species of nearby area. Instead, the project will pose positive impacts on the overall community in terms of water, sanitation, health and environmental aspects.

The land was available and also they were agreed to donate the land of their community for the project use. There was no conflict regarding land donation.

46. Gula Pur

The population of this village was 3,832 with 593 average household size. The average land holding was almost 10 to 50 acres by the individuals. Here, people lived as separate family. The household size was 6. The type of settlement was clustered. Only Muslims lived there. The major sources of livelihood were Agriculture, zamindaari, Trade and Labors. 70-80% people earned their livelihood by means of agricultural activities while rest of the 20% individuals were Labors. The average household income fluctuated between 10,000-15,000. The major crops were Wheat, Cotton and Sugarcane.

There remained frequent water disputes among landlords and farmers. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. And, it was also the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village.

The source of drinking water was hand pumps for the natives of rural area that was 60 to 65 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There was neither filtration plant nor wastewater treatment plant. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. It passed throughout the village in that exposed way producing smell and destroying the aesthetic beauty of village. There was no proper system of drainage, potable clean drinking water and sanitation service for the people.

The females were especially at great risk due to drinking of polluted water. Unhygienic conditions posed huge impact on the health conditions of mothers and young girls. Due to open defecation, pregnant ladies and young girls particularly faced hardships because of these scenarios because unclean conditions promoted infant's mortality in the rural areas. Diarrhea, Hepatitis and Cholera were some major diseases arising specifically in children. Toilet system was too pathetic.



Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community remained cooperative throughout the discussion. Flora, fauna, air and land of the nearby area will not be influenced. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All this scenario was observed during the site visit.

They stated that they had no issues about land contribution. They were willing to donate their land for the project use.



47. Baikh:

The population of this village was 6,233. The average land holding was almost 10 marlas to 1 canals by the individuals and the number of household was 972. The type of settlement was semi clustered. Here, people lived as separate family. The household size was 6. There was no ethnic group and all the people were Muslims. The major sources of livelihood were Agriculture and Labors. 80% people earned their livelihood by means of agricultural activities while rest of the 20% individuals were Labors. The average household income fluctuated between 15,000-20,000. The major crops were Wheat, Rice and Sugarcane.

Normally, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village. It was more effective than police. Feudal system was present in the village. And community was satisfied with this system as well.



The source of drinking water was ground water for the natives of rural area that was 150 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There had been installed water filtration plants for the community. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. It passed throughout the village in that exposed way. It was scattered and was collected at a specific place. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.



Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community remained cooperative throughout the discussion.



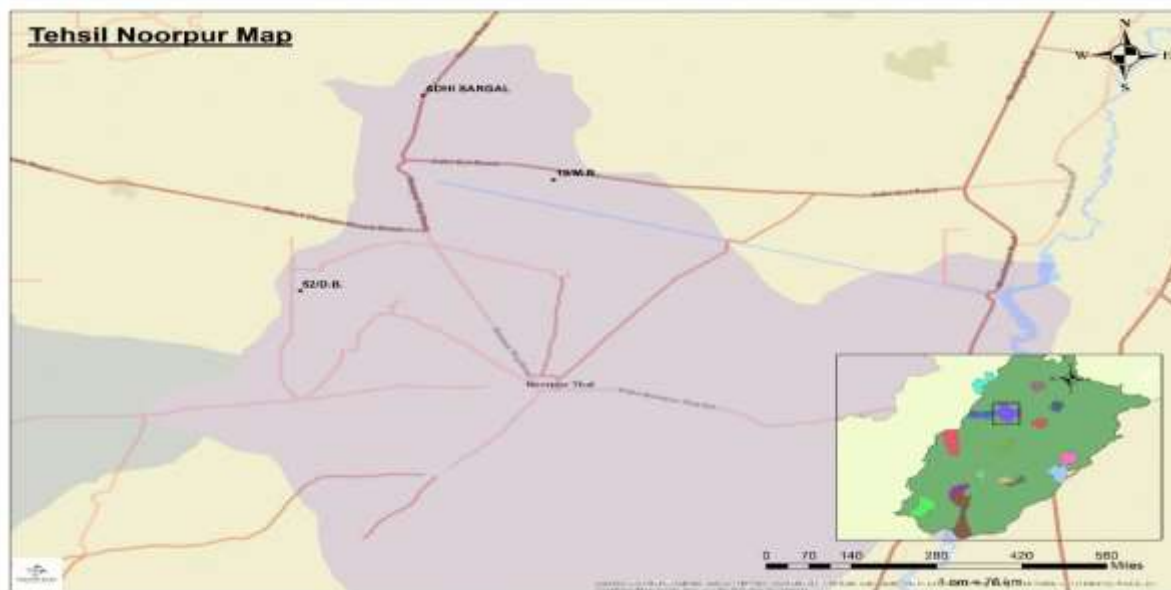
Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All this scenario was observed during the site visit.

They specified that they had no issues regarding land donation and also the land was available.

TEHSIL, NUR PUR THAL- DISTRICT, KHUSHAB

Noorpur Thal is a large town in the district of Khushab, in the state of Punjab in Pakistan. It is a home to about 90,000 people and is an important agricultural and commercial area, with plenty of seasonal farmer's markets. There are 4 sub-districts in the town, governed independently. Latitude and longitude coordinates are: 31.878471, 71.898636.

This tehsil has been chosen for the initiate of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people. Three settlements named; Aadhi Circle, 52 DB and 19 MB were selected among all to be assessed by our team. These villages were carefully chosen on the basis of particular criteria which were flood prone area and near water resource.



Sr.No	District	Tehsil	Villages	Characteristics
1	Khushab	Noorpur Thal	Adhi Circle	Established Village, along water body
2			52 D.B	Established Village
3			19M.B	Established Village

48. VILLAGE AADHI CIRCLE:

The population of this village was 10,000. The average land holding was almost from 10 Marla to 01 acre by the individuals and the number of household was 1700 in Aadhi Circle. The type of settlement was semi-clustered. Here, people lived as joint family. The household size was 10. There was no ethnic group and all the people were Muslims. The major sources of livelihood were Agriculture, Job based and Labors. 80% people earned their livelihood by means of agricultural activities, 5% people were Job Holders while rest of the 15% individuals were Labors. The average household income fluctuated between 10,000-15,000. The major crops were Wheat, Peanut, Channa and Sugarcane.

Frequently, there remained disputes and violent conflicts of water among the local people of the village. Sometimes there were disputes on the of drainage among different groups of the village those types of water based issues were resolved by local police. And if such circumstances may arise, conflict resolution mechanism and decision-



matter
and
the
the

making system too was dealt by the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Panchayat to solve all the disputes in the

entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village. It was more effective than police.

The source of drinking water was water supply, Taps (nalkas), motors, lakes and tube wells for the natives of rural area. 70% area was arid (Barani). There was 20 % use of tube wells. Local people were using tube well as personal water source there. The quality of water not satisfactory because it was acidic and bitter in taste as The local inhabitants of the village had to fetch water remote villages and they had to face extreme hardships in obtaining drinking water.



was
well.
from

Water pipes had been punctured and there was no concept sewerage. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. Water was flowing in the streets as no proper drainage system was present there. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.

Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community of Aadhi Circle remained cooperative throughout the discussion. Flora, fauna, air and land of the nearby area will not be influenced.



Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All these scenarios were observed during the site visit. They specified that they had no issues regarding land donation and also the state\ government land was available. The community proposed some suggestions that there should be filtration plants constructed in there village on individual levels.

49. VILLAGE 52 D.B:

The population of the village was comprised of more than 9,5,000 people on average. The type of the settlement was clustered semi-clustered and colonies were adjacent. The average land holding was 10 acres and the number of household were 1,400 in Mouza 52 M.B village. The household size was consisted of 7 to 10 members per house. All the people were Muslims and no ethnic group was found there. The major sources of livelihood were Agriculture, Labors and Jobs. 80% people were related to Agricultural activities, 20% individuals were labors and 10% people were doing Government Jobs. The average household income fluctuated between 15,000-20,000 thousand. The major crops were Wheat and Channa.

Usually, there was no dispute and violent conflict on water among the people of this village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in village. And, also the management for the local level grievance redressal mechanisms was managed by this person. Feudal system was seen there. It was common that one person hold all the land and rest of the people were working under his super vision. Moreover, he solved all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. And no one had the right to disobey him as everyone worked under his administration.



People obtained water through taps, tube wells and hand pumps. Those were the major source of water in that village. The tube wells were of 8 to 12 feet while the depth of water supply was 60 feet. The local community informed our team that clean water is above 100 feet but we are obtaining water of only 60 feet which is not clean and hygienic for them. For cultivation and farming the local community had to depend on rains since there was no Nehri Nizam in that village.

The quality of the water was pathetic since the regional water was contaminated. The taste of water was different level wise. The condition of sanitation system was not good enough. There were drains but those were exposed. All these drains passed throughout the village in the exposed way. Villagers faced many health issues due to these conditions. Hepatitis C was a common disease there.

Focused Group Discussion (FGD) was held in the village to discover the overall scenario and in-depth information of the existing circumstances. Moreover, the views on the project and land donation were also noted. Equal participation of men and woman was ensured. The community of village Mouza 52 D.B remained cooperative throughout discussion. There will be no effects on species of nearby area. Instead, the project will pose positive impacts on the overall community. The native people stated that the communal land was owned by the government and they as a community would too willing to donate it for Water sanitation project activities.



During Focus Group Discussion, the local community showed their concerns by stating that there was no any proper sewerage system and there was traditional gutter system in that village. Filtration plants were the need of the hour in that village because the water was contaminated and tasteless.

50. VILLAGE 19 M.B:

The population of village 19 M.B was comprised of 8 to 10,000 people on average. The type of the Semi-settlement was clustered as colonies were adjacent. The people were not having their own lands. The area was water logging and salinity prone. Mostly, there lands were un-populated. The household size was consisted of 6 members per house. All the people were Muslims and no ethnic group was found there. The

major sources of livelihood were Agriculture 40% and Labor 60%. The average household income was almost 10,000 to 30,000 thousand. The major crops were Wheat, Vegetables and Sugarcane.

Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System, Councillor, Lambardaar and Members in the village. Moreover, it was also responsible for the management of local level grievance redressal mechanisms and to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. Local people remained in argue with each other on sewerage and drainage issues, in that type of situations, the local people of village registered their complaints to counselor office.

The source of water was Taps and hand pumps which was at the depth of 70 feet. People obtained water either through Boring system or from tube wells. The



quality of water was average but it cannot be considered healthy. The condition of sanitation and drainage system was also poor and pathetic. The existing scheme was exposed. Villagers faced numerous health issues and Hepatitis C was observed in numerous people. Thus, these conditions illustrated that there were no proper water and sanitation services for the people and it was intensely needed to introduce those facilities appropriately.

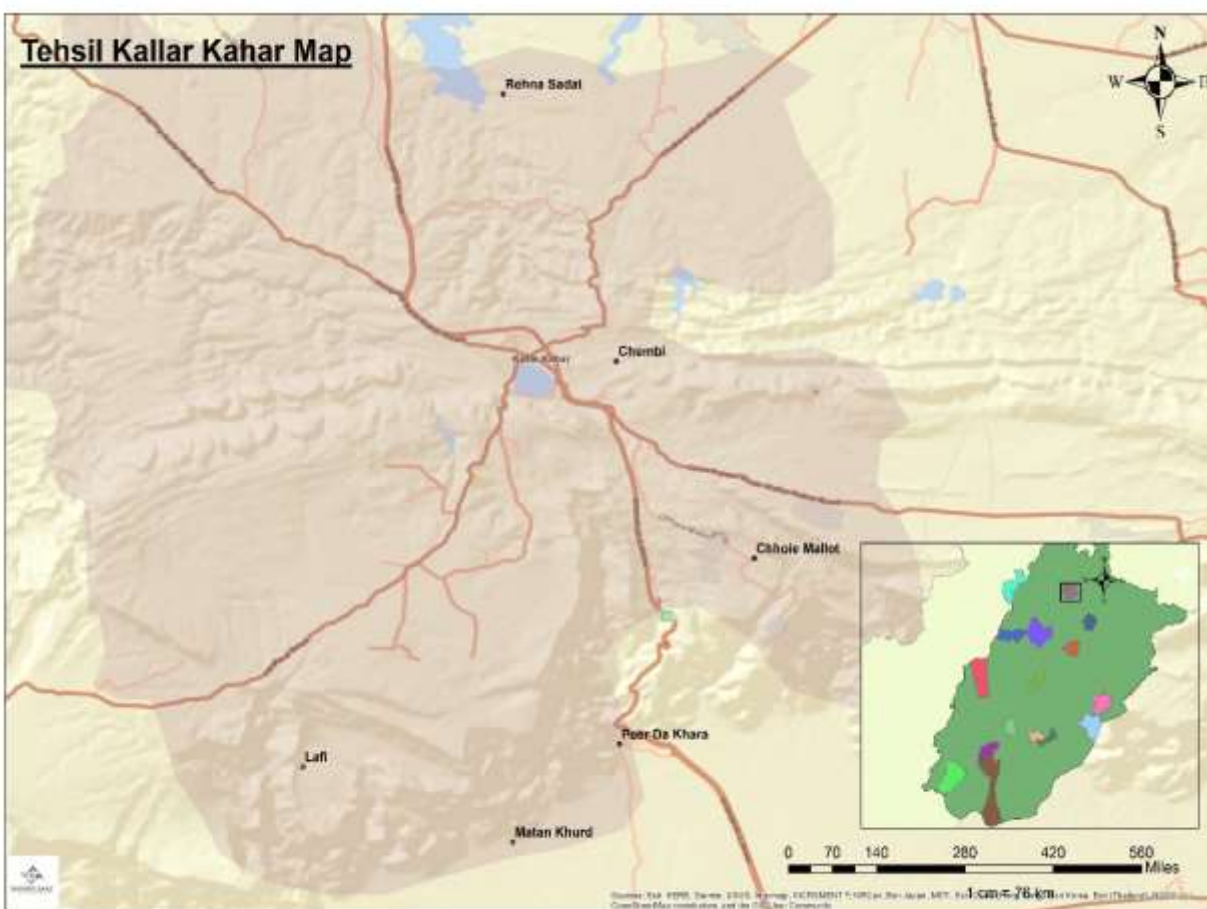
During the survey, Focused Group Discussion (FGD) was held in the village to discover the overall scenario and in-depth information of the existing circumstances. Moreover, the views on the project and land donation were also noted. The community of village remained supportive throughout discussion. Both genders; man and woman participated in focused group discussion. There will be no effects on species of nearby area. Instead, the project will pose positive impacts on the overall community in terms of water, sanitation, health and environmental aspects.



There was less land available in the village 19 M.B which could be used for the project use. According to the local community, the panchayat would determine the availability of communal land to be donated for the project activities and the project would be carried on with mutual consensus of the local community as well.

KALLAR KAHAR, CHAKWAL

Kallar Kahar is a Tehsil in district Chakwal. It is situated 25 km (15.5 miles) from district Chakwal. It is located about 125 km (78 miles) from Rawalpindi, which makes it an ideal tour from the both cities. It is situated at 32.78 north latitude, 72.7 east longitude and 635 meters' elevation above the sea level. Kallar Kahar lies in the Salt Range area. The Kalla Chitta ranges and the Margalla Hills make the boundary which lies in the north, while the Salt Ranges themselves make the boundary of south. According to 1998 census the total population of Chakwal is 10, 83725 including 95, 2033 rural and 13, 1692 urban inhabitants. This particular tehsil has been chosen for the initiate of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people.



Among all the villages, six settlements such as Chhoie Mallot, Lafi, Matan Khurd, Rehna Sadat, Chumbi and Peer da Khara were selected in the tehsil, Kallar Kahar to be assessed by our survey team. These villages were carefully chosen on the basis of particular set criteria which was comprised of adjacent to industrial area/ mountainous terrain, adjacent to water body/lake and on southern side of tehsil, very remote area.

SR.NO	DISTRICT	TEHSIL	VILLAGES	CHARACTERISTICS
-------	----------	--------	----------	-----------------

1	Chakwal	Kallar Kahar	Chhoie Mallot	Adjacent to industrial area/mountainous terrain
2			Lafi	Hilly Terrain
3			Matan Khurd	Settled area
4			Rehna Sadat	Adjacent to water body/lake
5			Chumbi	Mountainous
6			Peer Da Khara	On Southern side of tehsil, very remote area

51. Profile of Village Chhoie Malot (Kallar Kahar):

Total population of Chhoie Malot was 1300 with 300 households approximately with average land holding of 15 canal to 5 Marlas. Cultivation of crops, farming and various jobs doing were the major livelihood means of the project area. 40% people earned their livelihood by means of agricultural activities, 20% farming while rest of the 40% individuals were job holders. The average household income fluctuated between 10 to 15 thousand. The major crops were Wheat.

Sometimes, there was dispute of water among the women of village when they have to fetch water from remote areas. But, if such circumstances may arise then the conflict resolution mechanism and decision-making system was dealt by the Panchayat of village. Community also managed all the local level grievance redressal mechanisms. This was the responsibility of Numberdar to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects.

The community informed us that bore water was the major source of drinking water for them. Water level was 400 feet. In fact, there were two types of water i.e; Clean Water (sweet taste water) and Not clean water (bad quality water). Bore water comes from nearby village. From 20 to 25 feet, water is impure (KHAARA). This is arid area and there is no any proper source of water for farming and cultivation. The native people were of the view that they had solar system. Moreover, they informed us that this was hilly area, so water is not stagnant there for long time. Every person has made his own gutters on individual level. The community were serving themselves on self-help. Local people told us that sewerage of their region is average.



During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. During (FGD) the community of Chhoie Malot (Kallar Kahar) shared their concerns and informed us that there is no bore water for farming

and cultivation of crops. Electricity bills are so high as they could not afford them. No proper agricultural activities could be performed in our villages as they had limited resources. No any proper water body was serving in that village. At last, the community proposed the suggestion to have a joint filtration plant that should be implanted in the area. They were willing to donate the communal land to use for the project. They had no issue regarding land donation. Positively, the project activities would impact on their environment. Moreover, no negative impacts of the projects had been observed during the site visit.

52. Profile of Village Lafi (Kallar Kahar):

Lafi's settlement pattern was semi-clustered, comprising total population of 1200 to 1500 with 250 to 300 No. of households. Maximum 1.5 canal to 10 Marlas was the average household size. The average land holding of the area was 5 to 6 "VIGGAY" (native term) that is equivalent to 01 acres. Majority of local people were Muslim. 80% people's major livelihood mean was military job and the rest of the population belonged to cultivation of crops and carriers of goods and services. The average household income varied between 18 to 30K. The major crops were Wheat, Corn and pearl millet.



Often, there were water disputes among different groups of the area but if such circumstances may arise, the conflict was dealt by Panchayat and local committees of that village. They also managed all the local level grievance redressal mechanisms.



The major source of drinking water was well water which was 35 to 40 feet in depth. The quality of water was average. There was neither filtration plant nor wastewater treatment plant. There was need to improve the drinking water quality. The existing drainage system was open and uncovered. It passed throughout the village in that exposed way producing smell and destroying the aesthetic beauty of village. There was no proper system of sewerage and drainage, potable clean drinking water and sanitation service for the people.

Unfortunately, there was no any health center and private hospitals in the village. The local community showed serious concerns regarding no proper medical services. They were demanding health centers, clinics and hospitals in the area as contaminated water was causing and prevailing various stomach diseases in the village.

During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances.

The community remained very cooperative as they were willing to cooperate at the maximum during the tenure of project. They had no issue regarding land acquiring. Government

land was available for the utilization of project activities. Environmental Assessment Analysis depicts that there would be positive impacts of the project on that area. Their lands would be lush and agricultural activities would be flourished as well as health conditions would be better. Moreover, there will be no negative impacts on the community land if project activities are started.

53. Profile of village Mattan Khurd

MATTAN Khurd is a village of Kallar Kahar. Its has semi clustered settlement. Total population of Matan Khurd is 1500 with 100 households approximately. Household size is 1 canal to 10 Marlas. The community's major source of income is mining. Stones, Gypsum, Coal and iron are the main raw minerals of that region. Mostly people are Awan and Khan by cast. Major crop is wheat and Bajra. Average land holding is 2 canal to 5 to 10 marlas. Their average H.H Income was 10 to 15 thousand minimum and 18 to 20 thousand maximum. People were nice and well mannered. They showed cooperation in all data collection process. They are hard working. The major source of water was canal water and they perceived their drinking water to be of good quality. Existing sewerage arrangements were better the village. Sometimes native women do fight each other on their water storage turns, but they resolve their issues by mutual consensus. There were no any sanitation services in that village.



During FGDs community informed us about their water resources as well as their concerns regarding water issues. According to them there was no any proper sewerage system. There is a canal from uphill area and their village's altitude was low. From 2 to 3 km, water runs from drainage lines and points are made by constructing pipes. The community was of the view that they were facing hardships in obtaining clean drinking water and their women has to fetch water from remote villages. Community was ready to donate their communal land for the project activities.



54. Profile of Village Chumbi (Kallar Kahar)

The average land holding was 20 to 25 canals by the individuals and the number of household were 350 in Chumbi. All the people were Muslim. There were two major sources of livelihood present one was Agriculture and other was Job holding. 50% people earned their livelihood by means of agricultural activities while rest of the individuals were job holders. Unemployment ratio was 20%. Minority of thm

were also related to the profession of Teaching and Army. The average household income was 500 Rs. Daily wages. The major crops were Wheat.

Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Numberdar in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Numberdar to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects.

The source of potable water was water supply and motors. Poor and mixing contaminated water. Lakes water are getting polluted by the waste of the factories. No sewerage and everything is open. There was a need to improve the drinking water quality. The sanitation condition was poor as the existing sewerage system was open and people living nearby were not satisfied with this. They had to face many problems



regarding health due to this situation. Flies and mosquitoes were common there and spread diseases

among. There was no proper system of drainage and no water and sanitation service for the people.

During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. The local people stated that only one-day water comes and the other day's water does not come. There were issues of motors and they had purchase water tankers for daily use. Our wells water is polluted. The pipeline if of 600 feet and water tanks are also small sized. The community had to suffer from water deficiency as water sometimes does not comes for more than 2 weeks and sometimes more than 18 days. They suggested to have a proper filter plant and overhead water tanks should be bigger in size. Water comes only for 25 minutes. Due to contaminated water they had to suffer from various disease like abdominal and kidneys issues

Heath conditions were so miserable as they had no any health center. Only there was a trauma Centre. The local people had to move to Kallar Kahar in case of any emergency. Their women were facing serious health and maternity issues as there was no any maternal hospital in the village. The community was showing serious concerns regarding no medical facilities in their area. It was the matter of life and death for their women as in emergency cases they had to move to Kallar kahar's health centers. The community was very cooperative. They were willing to donate the land of the community for the use in the project. They had no issue regarding land donation. There were no effects on flora and fauna of the area. Moreover, no negative impacts of the projects had been observed during the site visit.

55. Profile of Village Rehna Sadat

The average land holding was 5 to 7 Marlas minimum and 18 to 20 canal maximum. Total population was 6500 thousand. All the people were Muslim. There were two major sources of livelihood present one was Agriculture and other was cattle keeping. 30% people earned their livelihood by means of agricultural activities while rest of the individuals were cattle keepers and jobless. The average household income was 5 to 10 thousand per month. The major crops were wheat and mustard. Saadat, Khalal, Balouch and Budhwal were the major castes of Rehna Sadat village of Kallar Kahar.



During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. The source of potable water was water supply and motors. Water supply has been stopped for long time so the native people were facing extreme hardships in getting clean drinking water. Water quality was average. It was hilly area so water was not stagnant there. People were complaining about no any proper water sanitation services. Community suggested to have proper sanitation system moreover, there should be individual water supply and plants as well.

Rehna Sadat is based on jungle area so rich wild life was being sighted over there. People were experiencing poor living conditions.

Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Numberdar in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Numberdar to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects.

56. Profile of village Peer Da Khara

Peer Da Khara is a village of Tehsil Kallar Kahar district Chakwal. People were living there in semi clustered houses. Total population of the area was 2500. 1 canal to 10 marlas was the average household size. Major source of living was mining and labour. Wheat, jawar and pearl millet was the major crop of the village. Average household income was 15 to 20 thousand. Average land holding was 7 killy. Awan was the caste of majority of native people.

Their source of potable water was water connections, boring and pipelines. Sewerage was okay. There was a pipeline from nearby village.

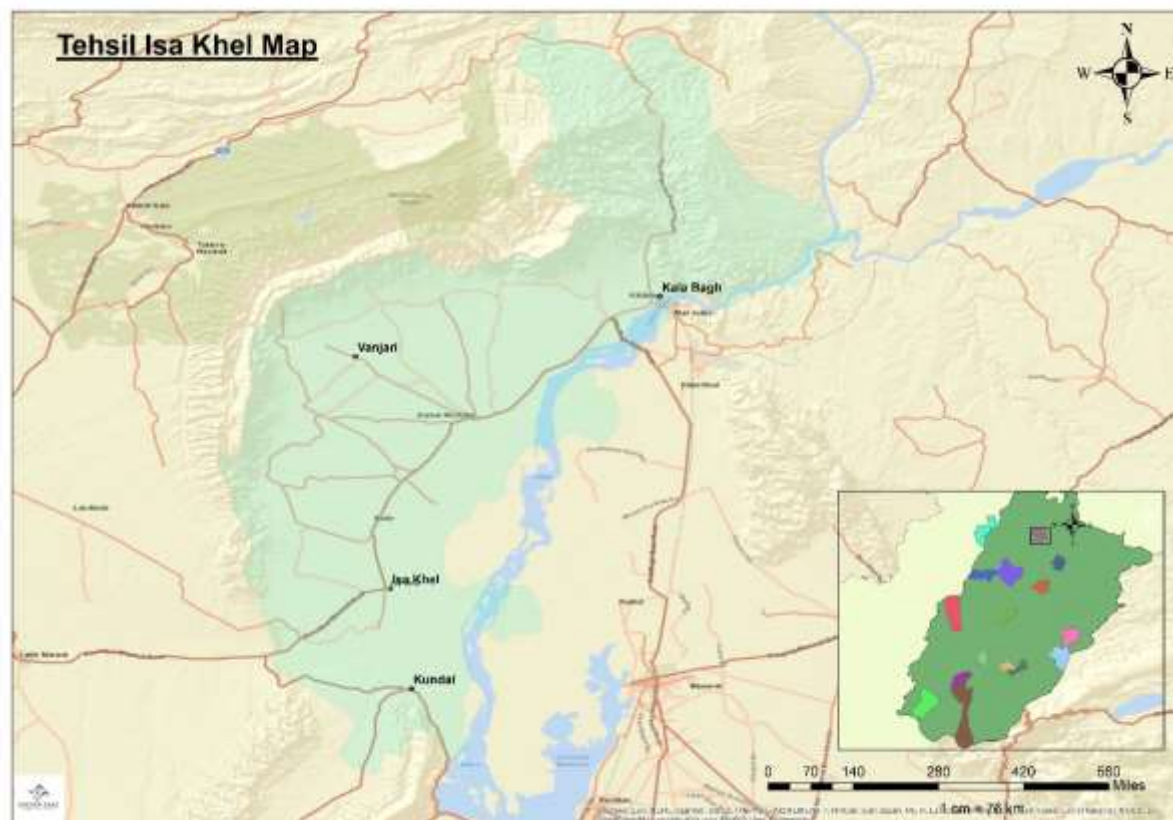


During Focus Group Discussion, the community informed our team that boring water was saltish in taste. Seepage was okay. Sometimes women argue with each other on water issues because they had to fetch water for far away villages on turns. But community resolved all their water based disputes by mutual consensus. There was Lillah Union Council working as a water body in that village. The community suggested that there should be proper water connections for the village. Local people stressed upon the clean water availability because clean drinking water would directly prevent diseases and overall community health would get better. The community had communal land and they were willing to grant it for project activities.

TEHSIL, ESA KHEL- DISTRICT, MIANWALI

Isa Khel is a town of Mianwali District in the Punjab province of Pakistan. The town is the headquarters of Isa Khel Tehsil, an administrative subdivision of the district. Isa Khel is an important town located in the west of Mianwali District. It is named after, a Niazi chief, till 1701. Later this territory came under control of newly established nawabs of Muzaffargarh.

This tehsil has been chosen for the initiation of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people. Four settlements named; Kala Bagh, Vingari, Kundal and Esa Khel were selected among all to be assessed by our team. These villages were carefully chosen on the basis of particular criteria which were flood prone area and near water resource.



Sr.No	District	Tehsil	Villages	Characteristics
1	Mianwali	Esa Khel	Kala Bagh	Near Water Resource
2			Vanjari	Established Population
3			Kundal	Along water body
4			Esa Khel	Along water resource, and hilly area

57. VILLAGE KALA BAGH:

The population of this village was 4,000. The average land holding was almost 4 acres by the individuals and the number of household was 500. The type of settlement was semi-clustered. Here, people lived as separate family. The household size was 7. There was no ethnic group and all the people were Muslims. The major sources of livelihood were Agriculture, Job based and Labors. 80% people earned their livelihood by means of agricultural activities, 5% people were Job Holders while rest of the 15% individuals

were Labors. The average household income fluctuated between 2,000-8,000. The major crops were Wheat, Wheat, and Rice.

Normally, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Panchayat to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village. It was more effective than police.

The source of drinking water was ground water for the natives of rural area. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for drinking purpose. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. Water was flowing in the streets as no proper drainage system was present there. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.



Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community of Basti Jatoli Wala remained cooperative throughout the discussion. Flora, fauna, air and land of the nearby area will not be influenced. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All these scenarios were observed during the site visit.



They specified that they had no issues regarding land donation and also the state\ government land was available.

58. Village Vanjari

The population of the village was comprised of more than 10,000 people on average. The type of the settlement was clustered and colonies were adjacent. The average land holding was 10 acres and the number of household were 1,500. The household size was consisted of 7 members per house. All the people were Muslims and no ethnic group was found there. The major sources of livelihood were Agriculture, Labors and Jobs. 80% people were related to Agricultural activities, 20% individuals were labors and 10% people

were doing Government Jobs. The average household income fluctuated between 10,000-15,000. The major crops were Wheat and Cotton.

Usually, there was no dispute and violent conflict on water among the people of this village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in village. And, also the management for the local level grievance redressal mechanisms was managed by this person. Feudal system was seen there. It was common that one person hold all the land and rest of the people were working under his super vision. Moreover, he solved all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. And no one had the right to disobey him as everyone worked under his administration.

People obtained water through tap water and also with hand pumps. The source of water was ground water. The quality of the water was good and drinkable. The taste was satisfactory according to the villagers. But, the condition of sanitation system was not good enough. There were drains but those were exposed. All these drains passed throughout the village in the exposed way. Villagers faced many health issues due to these conditions. Hepatitis C was a common disease there.



During the survey, Focused Group Discussion (FGD) was held in the village to discover the overall scenario and in-depth information of the existing circumstances. Moreover, the views on the project and land donation were also noted. Equal participation of men and woman was ensured. The community of village remained cooperative throughout discussion. There will be no effects on species of nearby area. Instead, the project will pose positive impacts on the overall community.

The people of village were not agreed to donate their land for the project work. They refused to contribute in this manner.

59. Kundal

The population of village was comprised of 12,000 people on average. The type of the settlement was clustered as colonies were adjacent. The average land holding was 10 acres and the number of household were 2,000 in village. The household size was consisted of 6 members per house. All the people were Muslims and no ethnic group was found there. The major sources of livelihood were Agriculture, Labors, Private business and Jobs. The average household income was almost 10,000. The major crops were Wheat, Vegetables and Sugarcane. Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in the village. Moreover, it was also responsible for the management of local level grievance redressal mechanisms and to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects. The feudal system was observed there. Almost entire community worked under the supervision of that person. The whole land of village was the

authority of a particular person and all the villagers earned by working on that land. No one had the right to challenge that person. Even they could not speak for their rights.

The source of water was ground water which was at the depth of 200 feet. People obtained water either through Boring system or from tube wells. The quality of water was average but it cannot be considered healthy. The color was changed. Yellowish colored water was being drunk by the villagers. The condition of sanitation system was also poor and pathetic. The existing scheme was exposed. Villagers faced numerous health issues and Hepatitis C was observed in numerous people. Thus, these conditions illustrated that there were no proper water and sanitation services for the people and it was intensely needed to introduce those facilities appropriately.

During the survey, Focused Group Discussion (FGD) was held in the village to discover the overall scenario and in-depth information of the existing circumstances. Moreover, the views on the project and land donation were also noted. The community of village remained supportive throughout discussion. Both genders; man and woman participated in focused group discussion. There will be no effects on species of nearby area. Instead, the project will pose positive impacts on the overall community in terms of water, sanitation, health and environmental aspects.

There was no availability of land in the village Mudwala which could be used for the project use.



60. Village esa khel:

The population of this village was 10,000. The average land holding was almost 15 acres by the individuals and the number of household was 1,500. Here, people lived as separate family. The household size was 7. No ethnic group was present only Muslims lived there. The major sources of livelihood were Agriculture, Labors and Job Holding. 70-80% people earned their livelihood by means of agricultural activities, 10% people were labors while rest of the 10% individuals were Job Holders. The average household income fluctuated between 10,000-15,000. The major crops were Wheat, Cotton and Sugarcane.

Typically, no dispute and violent conflict of water was found among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat System in this village. But, local level grievance redressal mechanisms was managed by Police in case if Panchayat fails to deal the matter. And also it was the responsibility of Police to solve all the disputes in the entire village related to Ethnicity, Biradaries and Religious Sects as people of different cast lived in this village.



The source of drinking water was underground water for the natives of rural area that was 60 feet in depth. The quality of water was not satisfactory. The water was turbid and even sometimes, water color was also changed. Yellowish colored water reached to the people for the drinking purpose. There was neither filtration plant nor wastewater treatment plant. There was a need to improve the drinking water quality. The existing drainage system was open and uncovered. It passed throughout the village in that exposed way producing smell and destroying the aesthetic beauty of village. There was no proper system of drainage, potable clean drinking water and sanitation service for the people. Therefore, people living nearby were not satisfied with these conditions. Thus, public health and hygiene conditions were also meager.

They had to face many problems regarding health due to this situation. The females were specially at great risk due to drinking of polluted water. Unhygienic conditions posed huge impact on the health conditions of mothers and young girls. Due to open defecation, the pregnant ladies and young girls particularly faced hardships because unclean conditions promoted infant's mortality in the rural areas. Flies and mosquitoes were common there and spread diseases among people. Diarrhea, Hepatitis and Cholera were some major common diseases.

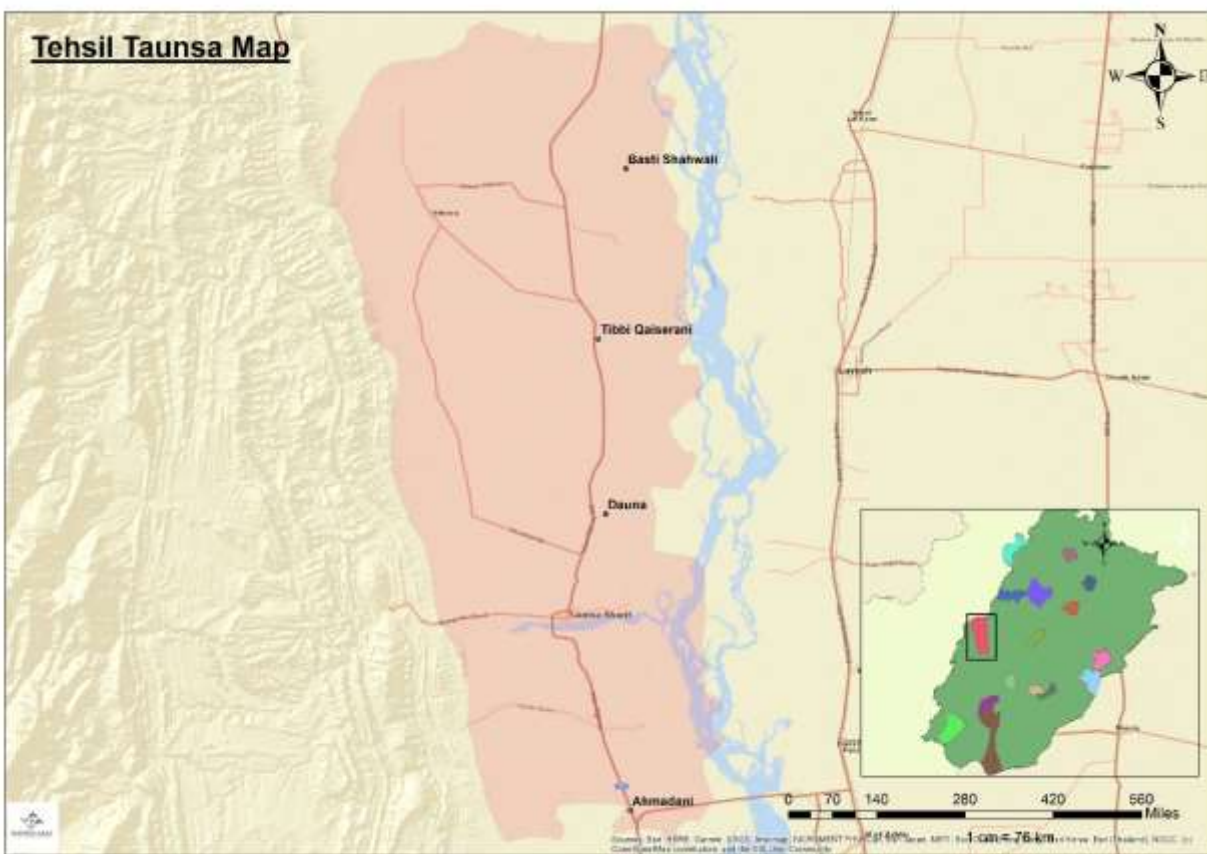


Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances during the surveys. The equal contribution of men and women was ensured in the Focused Group Discussion (FGD). The community of Gagrewale remained cooperative throughout the discussion. Flora, fauna, air and land of the nearby area will not be influenced. Moreover, it was also found that no negative impacts will be observed on the overall environment due to this project. All this scenario was observed during the site visit.

They stated that they had no issue about land contribution. They were willing to donate their land for the project use. State\ Government land was available there.

TEHSIL TAUNSA SHAREEF, DISTRICT D.G KHAN

Taunsa Sharif or Taunsa, is a Tehsil (subdivision) of Dera Ghazi Khan District in the Punjab province of Pakistan. The town of Taunsa Sharif is the headquarters of the tehsil. The town has Important Sufi shrines, the most notable is that of Hazrat Muhammad Suleiman Taunsvi. Taunsa Sharif is located on the Karachi-Peshawar Highway, which is also known as Indus high way, it is approximately 975 km from Karachi and 600 km from Lahore. Taunsa is also the location of one of the head works on the Indus River called Taunsa Barrage, located several kilometers south of Taunsa city.



This particular tehsil has been chosen for the initiate of the Punjab Rural Sustainable Water and Sanitation Supply Project (PRSWSSP) by the Government of Punjab (GoPb) because the existing conditions of water sanitation and drainage are wretched in the villages, moreover, a huge issue of water supply and service is faced by the native people. Among all the villages, four settlements such as Tibbi Qaiserani, Basti Shahwali, Ahmadani and Dauna were selected in the tehsil, Taunsa Sharif to be assessed by our survey team. These villages were carefully chosen on the basis of particular set criteria which was comprised of uncultivated land, water resource and spontaneous population.

Sr.no	District	Tehsil	Villages	Characteristics
1	DG Khan	Taunsa	Tibbi Qaiserani	Saline area, next to water body, flood prone area.
2			Basti Shah Wali	Undulating terrain.
3			Ahmadani	Uncultivated land, Spontaneous Population.
4			Dauna	Settled Population with unplanned land.

61. Village Profile Of Tibbi Qaiserani

The total estimated population of village Tibbi Qaiserani was 20,000 thousand with 2500 to 3000 number of households approximately. Moreover, female ratio was higher than males that was almost 60%. The local people were living in semi- clustered settlement pattern. The average land holding was 2 to 200 acres by the individuals while there were 45 percent landless inhabitants in village Tibbi Qaiserani. Usually, people lived in joint family system where every family comprised of at least 7 to 8 children. The household size varied between 03 to 05 Marla minimum to 01 Canal maximum. All the people were Muslim. There were three major sources of livelihood present, one was farming/cultivation 50 percent, business and labor 20 percent and jobless ratio was 20 percent while 10 percent people were doing different jobs over there. The average household income fluctuated between 6 to 7 thousand monthly, 300 to 400 rupees on daily wages. The major crops were Wheat, and cotton. Qaiserani, Miana, Sidiqui and Kalro were the major ethnic groups found in village Tibbi Qaiserani. Mostly, that village consisted of jungle area and wild wolves were the major wild life found over there.



Usually, there remained frequent disputes and violent conflicts of water among the people of village. But, if such circumstances may arise then the conflict resolution mechanism and decision-making system was dealt by the Numberdar and Panchayat of that village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Numberdar to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects.

Normally, on sewerage issue, the local community had violent clashes on daily bases. Moreover, the villagers always had violent conflicts on turns (Vari Dari) of irrigation water (Nehri Nizam). The source of potable water was water supply which comes from 8 kilometers. There was 40 years old water supply scheme that was not functional now. So the community has to run the system of water by self-help. That was saim zada region. Water comes for only half hour. The quality of water was worst. No sewerage arrangements there. There was a need to improve the drinking water quality. The sanitation condition was poor as the existing sewerage system was open and people living nearby were not satisfied with that. They had to face many problems regarding health due to this situation. Flies and mosquitoes were common there and spread diseases among. There was no proper system of drainage and no water and sanitation service for the people. Local User Committee Punjab and Irrigation Department were working as water and sanitation management and services in Village Tibbi Qaiserani.

During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. The community very cooperative. They were willing to donate the communal land for the use in the project as it was remained useless for several years. They had no issue regarding land donation. There were no effects on flora and fauna of the area. Moreover, no negative impacts of the projects had been observed during the site visit.

In Focused Group Discussion (FGDs), the native people complained about the contaminated water which was causing Malaria, Diarrhea, Gestro and various stomach and abdominal issues. Only one Rural Health Centre was working in their village that was poorly equipped. They proposed some suggestion in this regard. According to them, there should be water supply projects and distribution networks should be designed over there.



There should be no mixing in water. The water storage had been collapsed. A mega project for proper sewerage system was badly needed in their village. There should be a Nullah to tackle up with saim or waste water and it should be given 10 to 12 feet depth minimum. There were 1500-acre land that was remained useless for a long period of time so the local government should take action in this regard.

62. Village Profile Of Basti Shah Wali

Local people of village Basti Shah Wali lived in Katcha Makan settlement patterns. Total population was 8000 thousand with average household of 2500 to 3000. Agriculture 50%, labour and farming were the major source of living in Basti Shah Wali D.G Khan. Ethnic groups were Qaiserani, Miana, Sidiqui and Kalro and their major crops were cotton and wheat. 200 canal to 02 acre was their average land holding and the average household income of the villagers was between 7 to 8 thousand monthly, that was 300 to 400 rupees daily wages. The major crops of Village Basti Shah Wali were wheat and cotton.



Usually, there remained frequent disputes and violent conflicts of water among the people of village, specifically among native women. But, if such circumstances may arise then the conflict resolution mechanism and decision-making system was dealt by the Jirga, Numberdar and Panchayat system of that village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Numberdar and Jirga to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects.

The major sources of potable water were government water supply and pipe water supply in village Basti Shah Wali. While tube wells, tabs and water tanks were the other means of obtaining potable water over there. People reported our team that water was of bitter taste. There was no proper sewerage system in their village. Only one wall man was serving over there.

During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. The community very cooperative. They were willing to donate the communal land for the use in the project as it was remained useless for several years. They had no issue regarding land donation. There were no effects on flora and fauna of the area. Moreover, no negative impacts of the projects had been observed during the site visit. Moreover, they stated that their land would be flourished and local economy of their area would grow as well.

During the Focused Group Discussion (FGDs), the male community informed us about the water related issues being faced by them. They complained about the taste of the water that was bitter and not worthy of drinking. The government water which reached to us was more than 600 to 700 feet. Water supply was contaminated and bore water was bitter in taste. There was TDS level from 20 to 2000 feet. There was boring water from 8 kilometers. After pipe supply, the water had been stored in tanks and then distributed to the local community of the village. In tanks, there was water of 600 feet and when it reached to us, it became 700 feet and with that water, sewerage and waste water got mixed in that.



The female community, during Focused Group Discussion (FGDs) informed us that water was not clean in their area as it was Khara, saline and bitter in taste. They had to suffer from abdominal diseases. There was no any proper sewerage system. Clean and contaminated water was mixed over there. Often the local women had to face water supply mismanagement as water was not available to them for 15 to 20 days. After every 3 days water comes and they had to fetch water from remote villages that were 5 to 6 kilometers far away from their villages. There should be proper filtration plant to be installed in their village Basti Shah Wali, so that the local community could obtain clean and fresh water to drink.

63. Village Profile of Ahmadani Dera Ghazi Khan

Local people lived in semi clustered settlement patterns. Total population was 10000 to 12000 thousands with average household of 2500 to 3000. The major sources of living were Agriculture 50%, trading 10%, unemployment 10%, labor and farming were the major source of living in village Ahmadani DG Khan. Ethnic groups were kalrah 20% and Baloch 80% and their major crops were cotton and wheat. 7 marla to 2 kinal was their average land holding and the average household income of the community was 400 to 500 daily wages.

Usually, there remained frequent disputes and violent conflicts of water among the people of village. But, if such circumstances may arise then the conflict resolution mechanism and decision-making system was dealt by the Numberdar and Panchayat of that village. He also managed all the local level grievance redressal mechanisms. This was the responsibility of Numberdar to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects.

Normally, on sewerage issue, the local community had violent clashes on daily bases. Moreover, the villagers always had violent conflicts on turns (Vari Dari) of irrigation water (Nehri Nizam).

The source of potable water was water supply which comes from 8 kilometers. There was 40 years old water supply scheme that was not functional now. So the community has to run the system of water by self-help. That was saim zada region. Water comes for only half hour. The quality of water was worst. No sewerage arrangements there. There was a need to improve the drinking water quality. The sanitation condition was poor as the existing sewerage system was open and people living nearby were not satisfied with that. They had to face many problems regarding health due to this situation. Flies and mosquitoes were common there and spread diseases among. There was no proper system of drainage and no water and sanitation service for the people. Local User Committee Punjab and Irrigation Department were working as water and sanitation management and services in Village Tibbi Qaiserani.



The community informed us about the potable water supply that Gov. water supply and pipeline water supply were the major sources of obtaining water in the village. The taste of water was bitter and there was no any sewerage system in that village. No major type of water based conflicts but if there happened any conflict of water then the PANCHAYAT was supposed to resolve their issues.

During the survey, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. The community very cooperative. They were willing to donate the communal land for the use in the project as it was remained useless for several years. They had no issue regarding land donation. There were no effects on flora and fauna of the area. Moreover, no negative impacts of the projects had been observed during the site visit.

In Focused Group Discussion (FGDs), the native people complained about the contaminated water which was causing Malaria, Diarrhea, Gastro and various stomach and abdominal issues. Only one Rural Health Centre was working in their village that was poorly equipped. They proposed some suggestion in this regard. According to them, there should be water supply projects and distribution networks should be designed over there.



There should be no mixing in water. The water storage had been collapsed. A mega project for proper sewerage system was badly needed in their village. There should be a Nullah to tackle up with saim or waste water and it should be given 10 to 12 feet depth minimum. There were 1500-acre land that was remained useless for a long period of time so the local government should take action in this regard.

64. Village Profile Of Dauna Dera Ghazi Khan

Local people lived in semi clustered settlement patterns. Total population was 13 to 15 thousands with average household of 7500 to 8000. Cultivation, labor and farming were the major source of living in Dauna DG Khan. Ethnic groups were Jutt, Baloch and their major crops were cotton, Sugarcane and wheat. 10

marla to 5 kinal was their average land holding and the average household income of the villagers was 400 to 500 on daily wages.

Usually, there was no dispute and violent conflict of water among the people of village. But, if such circumstances may arise than the conflict resolution mechanism and decision-making system was dealt by the Panchayat in village Rojhan. But, there was no specific management for the local level grievance redressal mechanisms and to solve all the disputes in the entire village which were related to Ethnicity, Biradaries and Religious Sects.



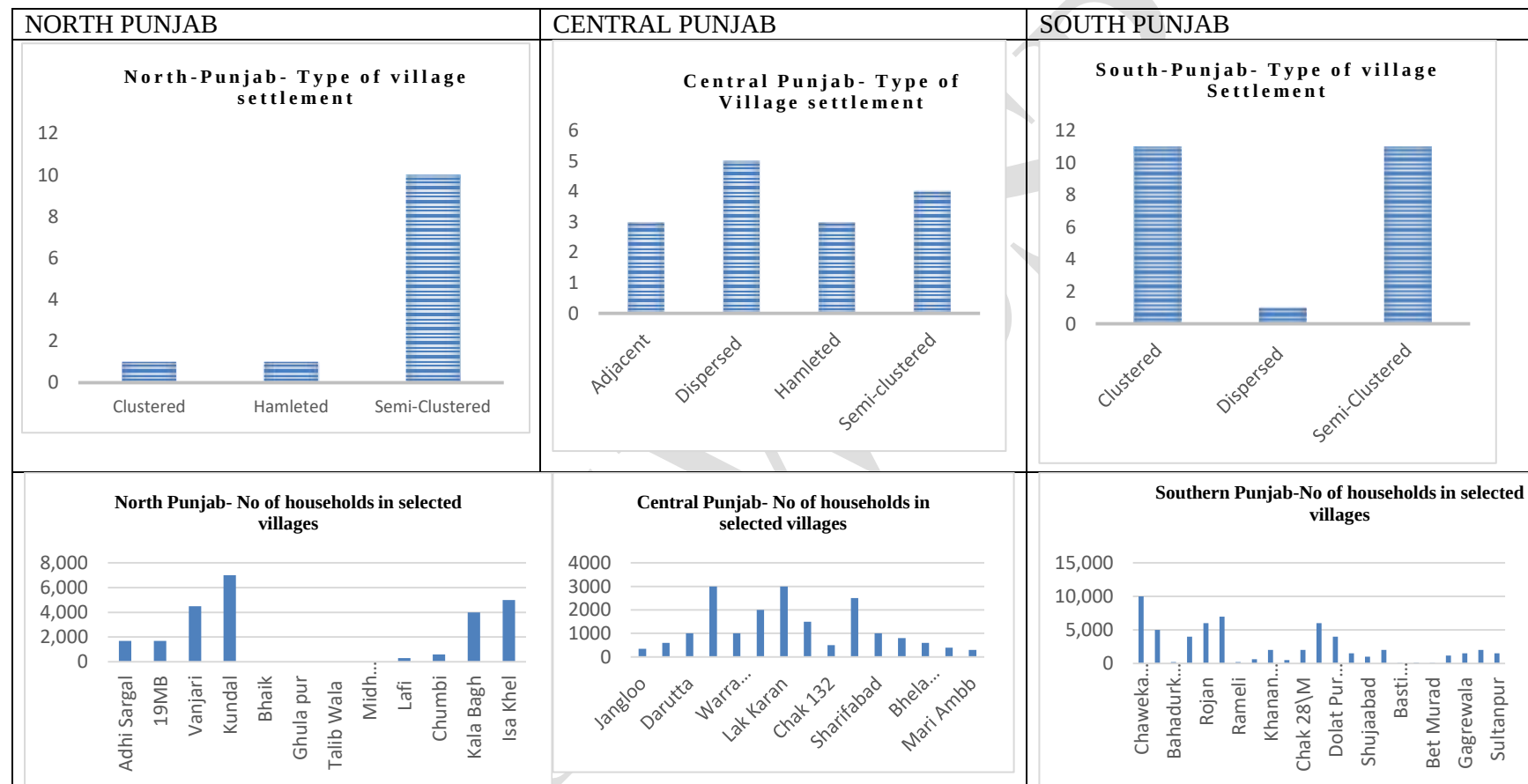
The community informed us about the potable water supply that Gov. Water supply and water Pump, Filtration plant were the major sources of obtain water in the village. The taste of water was bitter and there was no any sewerage system in that village. The sanitation systems were meager. There was no proper drainage system. It was exposed and the it passed throughout the village in same condition. It spreaded many diseases in the villagers. There rose many health issues due to these scenarios. Pathetic conditions of water supply and sanitation were observed there.

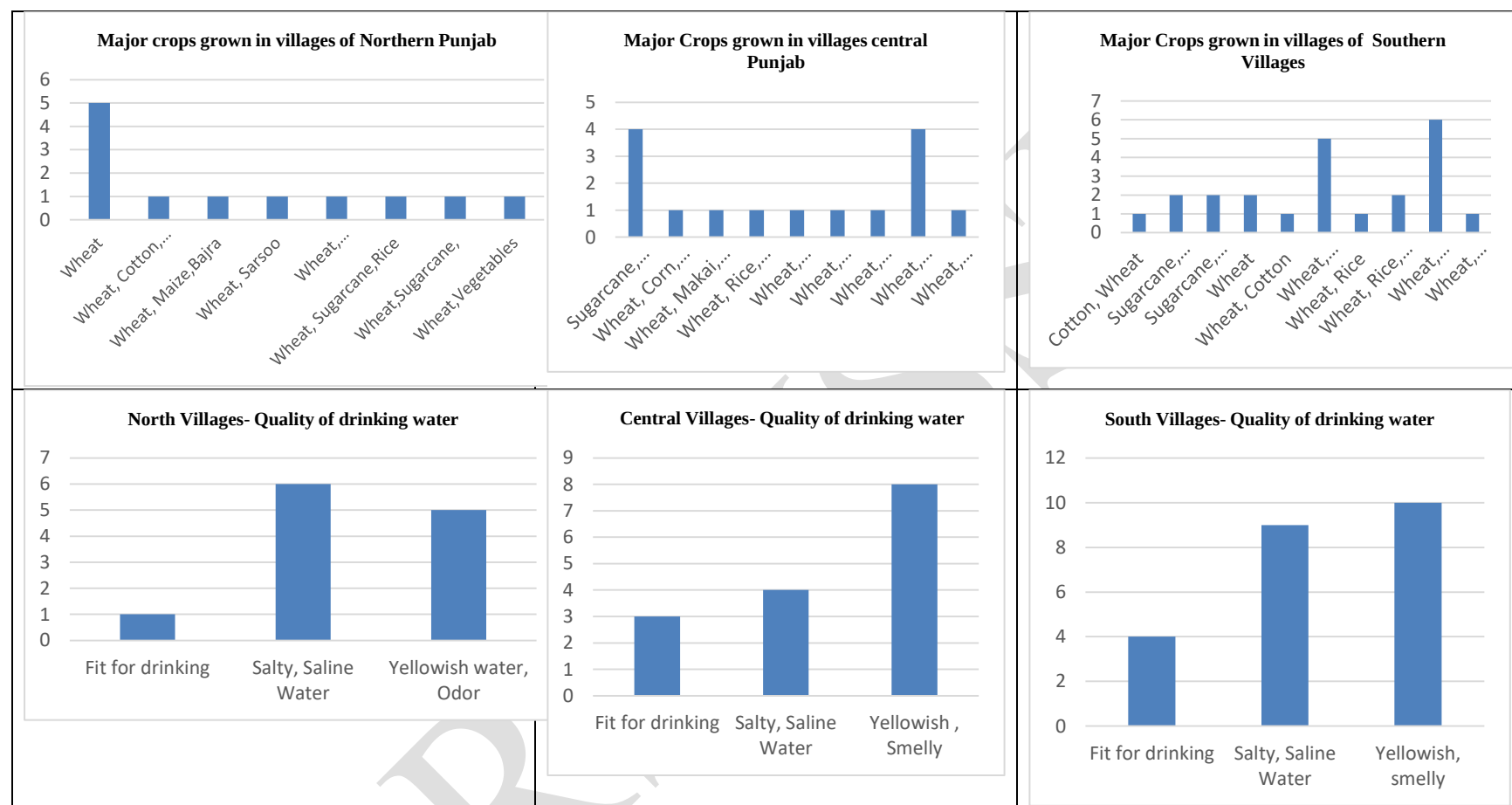
During the site visit, Focused Group Discussion (FGD) was held in each and every village to discover the overall scenario and in-depth information of the existing circumstances. The community of village remained very cooperative throughout discussion. They participated in the discussion with eagerness and described the existing conditions in detail. There will be no effects on species of nearby area due to project work. Instead, the project will pose positive impacts on the overall community.

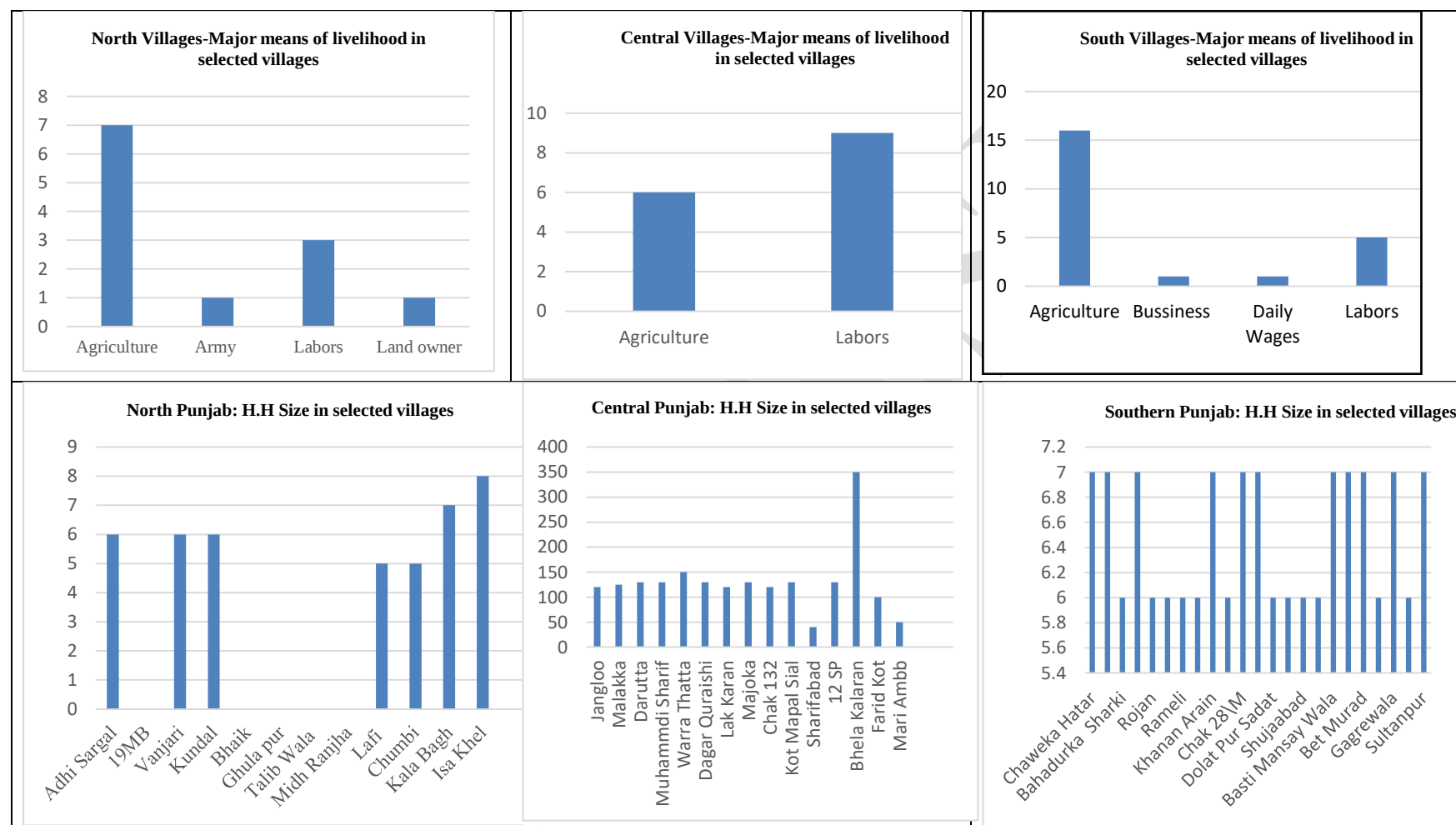


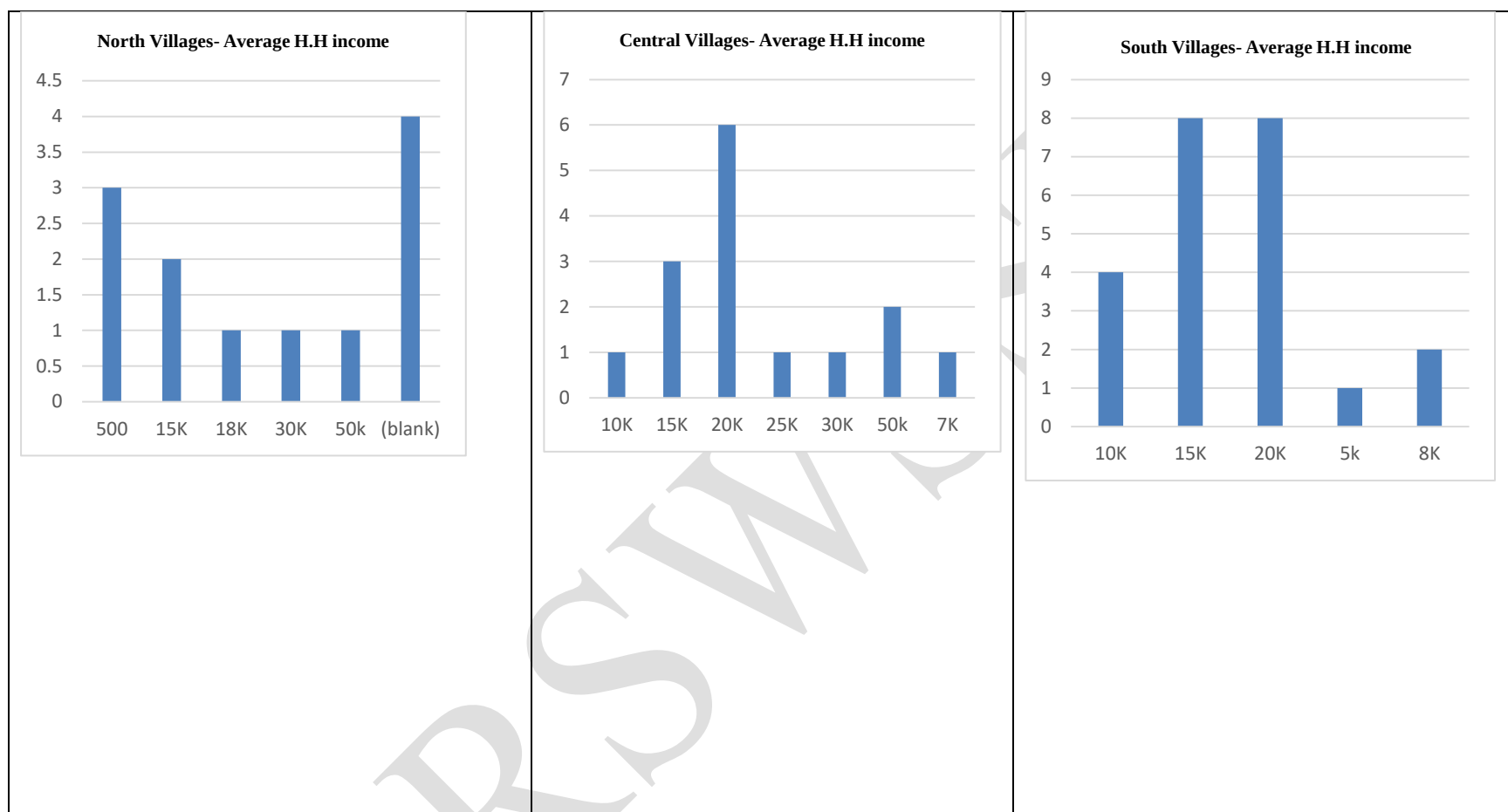
During the discussion, the females informed us that water was not clean in their area as it was Khara, saline and bitter in taste. They had to suffer from severe diseases such as Hepatitis. There was no any proper sewerage system. Clean and contaminated water was mixed over there. Often the local women had to face water supply mismanagement as water was not available for many days. After few days' water came and they had to fetch water from remote villages which were 6 to 7 kilometers far away from their villages. There must be filtration plants for obtaining clean water.

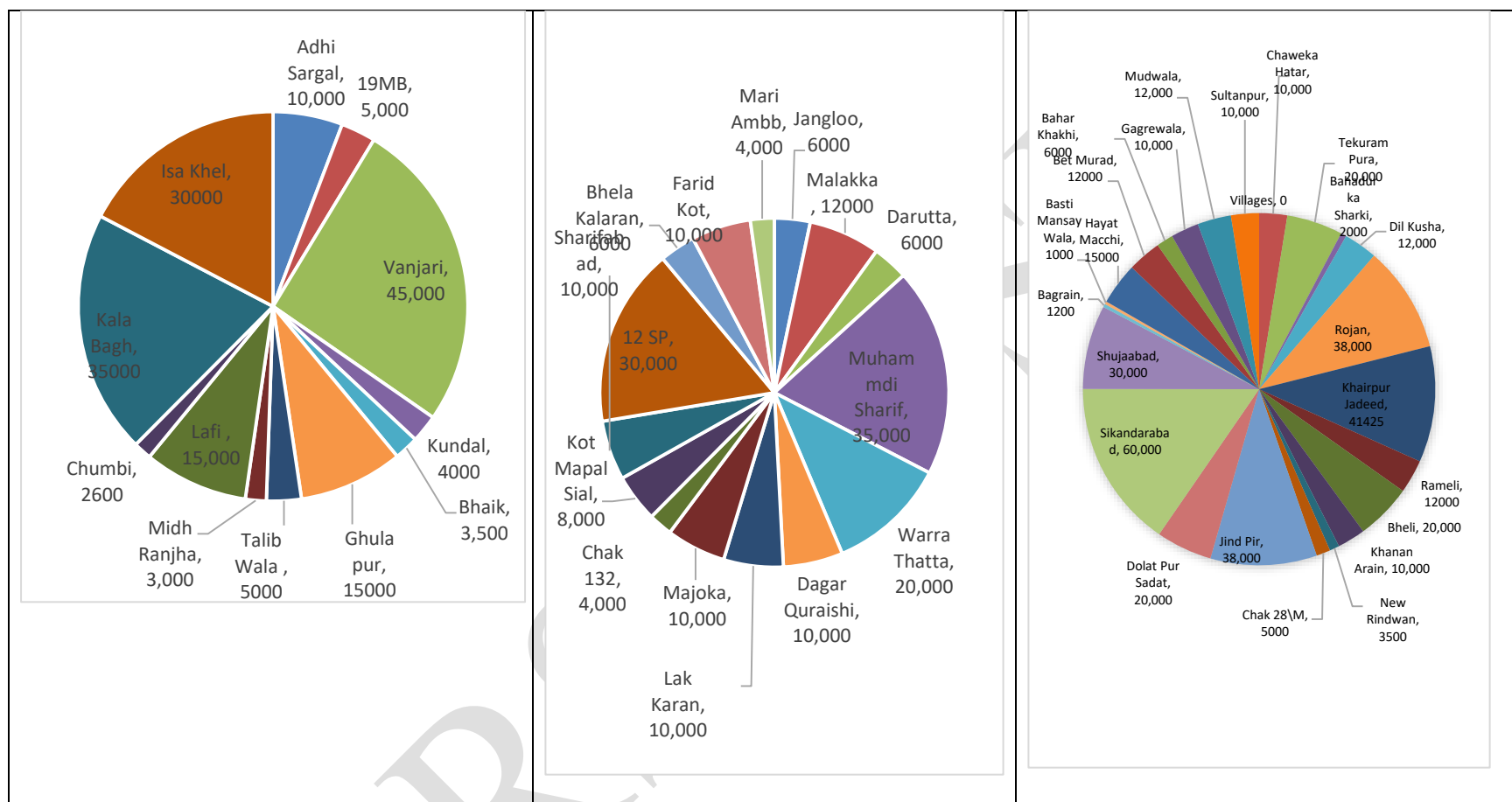
Analysis of Villages Profile

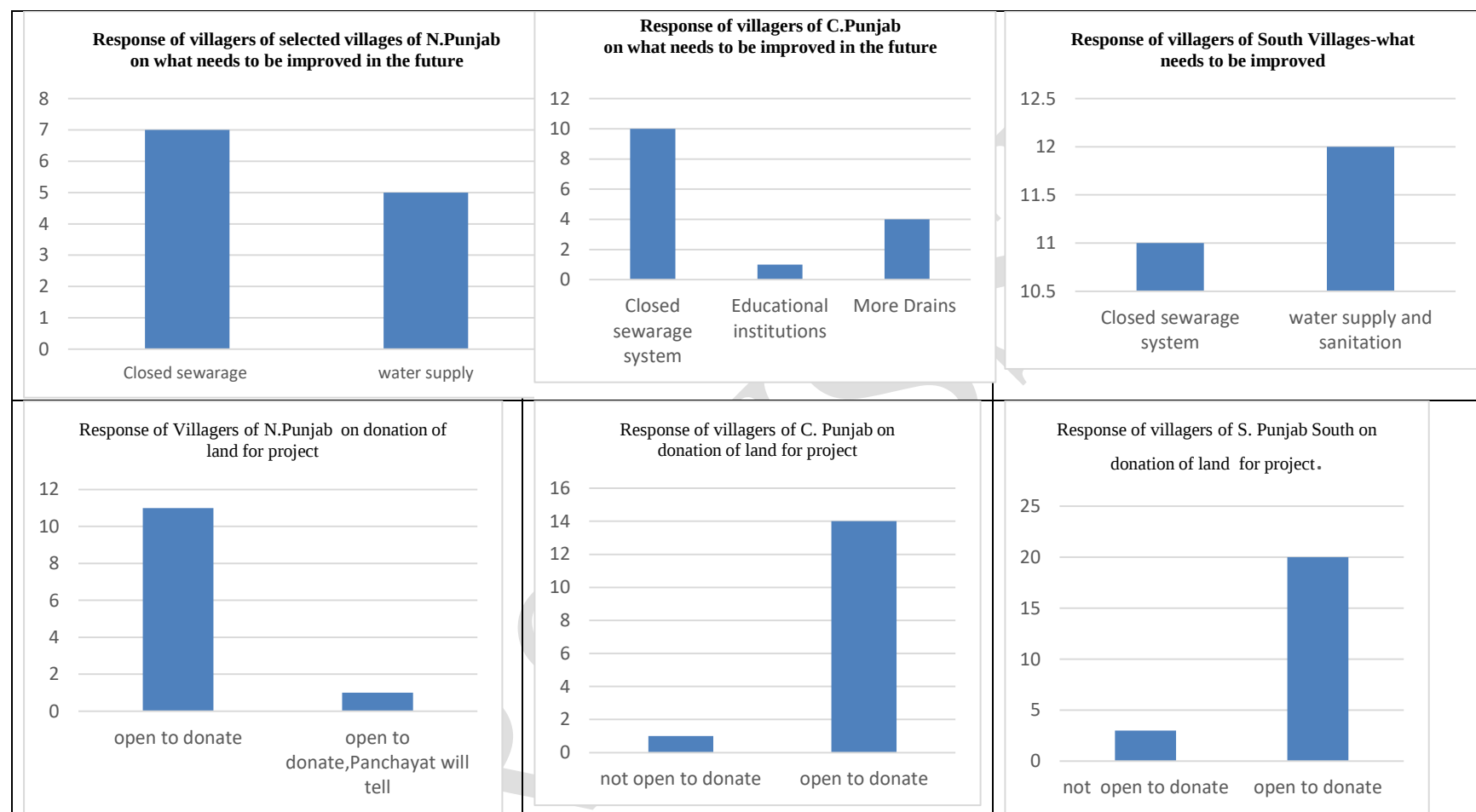












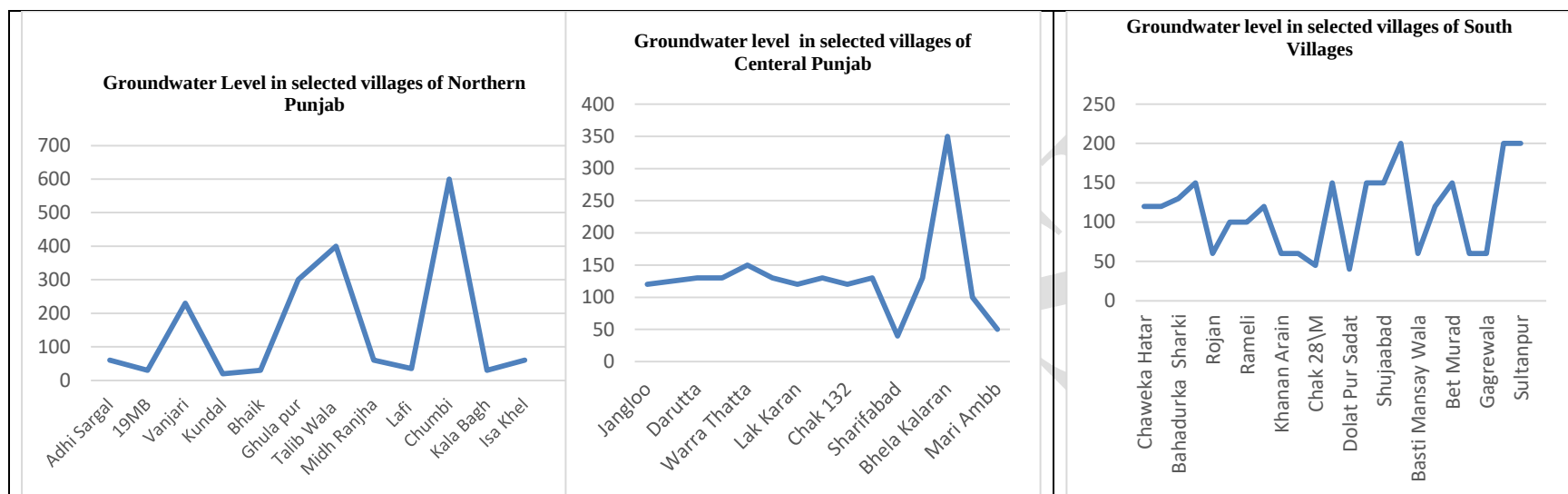


Table 36: Key Informants

Village	Contact person
Pakpattan-SP-12-	Zafar Baloch Sahab
Pakpattan -Farid Kot	Haji Mohd Murtaza Wattu (judge)
Pakpattan -Bella Kalaran	Chaudhry Ali
Pakpattan -Bella Kalaran	Mahmood
Pakpattan-Mari Amb	Qari Maqbool Ahmed
Ahmadpur Sial- Kot Mapal Sial	Muhammad Nawaz
Ahmadpur Sial- Kot Mapal Sial	Mian Asad
Ahmadpur Sial- Sharifabad	Ghulam Shabir
Ahmadpur Sial 13 L Chak	Zafar
Ahmadpur Sial 13 L Chak	Haji Mehe Ali
Bhowana –Warra Thatta	Syed Awn Haider
Bhowana- Muhammadi Sharif	Ghullam Mohd
Bhowana- Darutta	Mohd Younas
Bhowana- Warra Thatta	Numberdar Warra Thatta
Bhowana- Chak 240	Numberdar Zulfiqar-
Darya Khan-Tehsil Government	Irfan
Darya Khan-Tehsil Government	Mukhtiyar
Darya Khan- Daggar Qureshi	Mushtaq Qureshi
Darya Khan-Lak Kalaran	Fakher Zaman
Rojhan-Rojhan	Ahmad
Shujaabad-Sikandrabad	Rana Kausar
Alipur-Gagrewale	Zeeshan
Alipur-Mudwala	Malik Junaid
Alipur-Sultan Pur	Javaid
Alipur Basti Jatoli Wala	M. Ali
Khairpur-Kanan Araian	Abdul Khaliq
Khairpur-Bheli	Haji Ahmad
Karor Pacca-Dolat Pur Sadat	M. Fiaz
Mianwali, Esa Khel	Shaffi-Ullah Khan-(Accountant)
Mianwali, Kala Bagh	Munir Ahmad (Accountant)
Mianwali, Vanjari	Gul Jan-(Ex-Surveyor Village)
Mianwali, Kundal	Zafar Ullah Khan- (Surveyor Village)
Khushab-Aadhi Circle	Ehsan Ellahi-(Police Man)
Khushab 19 M.B	Habib Ullah -(Shop Keeper)
Khushab 52 D.B	Ibrahim -(Shop Keeper)
Dera Ghazi Khan -Tibbi Qaiserani	Ghulam Shabir
Basti Shahwali	Bashir Ahmad
Ahmadani	Athar Abbas
Dauna	Fouji M. Younas
Chakwal, Chhoie Mallot	M. Azhar
Chakwal-Lafi	Sadiq
Chakwal-Matan Khurd	Abdullah
Chakwal-Rehna Sadat	M. Touqeer
Chakwal -Chumbi	Nadeem
Chakwal-Peer Da Khara	Tahir

Sargodha-Baikh	Sayed Ali
Sargodha-Takht Hazara	Habib Ullah
Sargodha-Gula Pur	Fateh Din
Sargodha-Talib Wala	M. Qureshi
Sargodha-Mind Ranjha	M. Naqvi

Annexure L: Public Consultaion date & participants

S.No	Date	Village Name	# of Participants	S.No	Date	Village Name	# of Participants	S. No	Date	Village Name	No of Participants
1.	01-02- 2021	Mianwali, (Esa Khel)	01	2.	01-02-2021	Bahadurka Sharki	18	3.	01-02-2021	Chak 240 Malaka	12
4.	01-02- 2021	Mianwali	02	5.	01-02-2021	Bahawalnagar	17	6.	01-02-2021	Chak184 Jhanglu	15
7.	01-02- 2021	Mianwali	03	8.	02-02-2021	Bheli	15	9.	01-02-2021	Muhamadi Sharif	18
10.	01-02- 2021	Mianwali	04	11.	02-02-2021	Khairpur Jadeed	15	12.	02-02-2021	Darutta	22
13.	01-02- 2021	Mianwali, (Esa Khel)	05	14.	03-02-2021	Basti Mansay wala	7	15.	02-02-2021	Warra Thatta	25
16.	01-02- 2021	Mianwali, (Esa Khel)	06	17.	03-02-2021	Bangrain	19	18.	02-02-2021	Sharifabad	9
19.	01-02- 2021	Mianwali	07	20.	03-02-2021	Shuja Abad	15	21.	02-02-2021	Kot Mapal sia	6
22.	01-02- 2021	Mianwali, (M.C)	08	23.	03-02-2021	Sikandarabad	16	24.	03-02-2021	Lak Kalan	18
25.	01-02-2021	Mianwali, (Kala Bagh)	09	26.	05-02-2021	Bet Murad	11	27.	03-02-2021	Majuka	10
28.	02-02- 2021	Mianwali, (Vanjari)	10	29.	05-02-2021	Bahar Khaki	15	30.	03-02-2021	Daggar Qureshi	7
31.	02-02- 2021	Mianwali, (Vanjari)	11	32.	06-02-2021	Mudwala	14	33.	04-02-2021	SP12	22
34.	02-02- 2021	Mianwali, (Kundal)	12	35.	06-02-2021	Basti Jatoi wala	15	36.	04-02-2021	Farid Kot	6
37.	02-02- 2021	Khushab (Aadhi Circle)	01	38.	06-02-2021	21ABS	15	39.	04-02-2021	Bhela Kalaran	5
40.	02-02- 2021	Khushab (NurPur Thal)	02	41.	06-02-2021	Hayat Machi	11	42.	04-02-2021	Mari Amb	7
43.	02-02- 2021	Khushab	03	44.	06-02-2021	Gagrewala	14				
45.	03-02- 2021	Khushab (Aadhi Circle)	04	46.	08-02-2021	Rojhan	15				
47.	03-02- 2021	Khushab (19 M.B)	05	48.	08-02-2021	Sultan Pur	19				
49.	03-02- 2021	Khushab (52 D.B)	06								

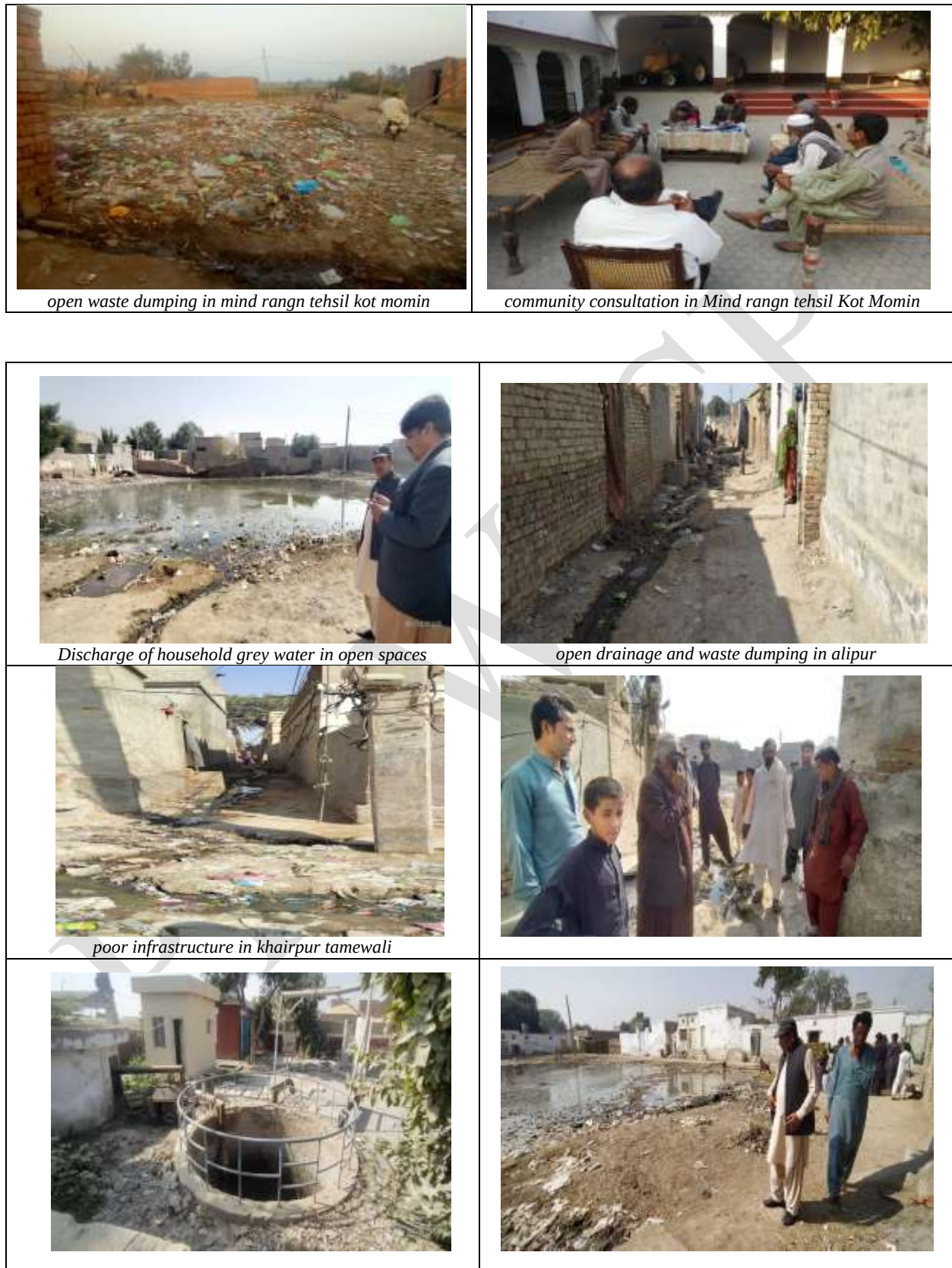
[illegible]

Annexure M Photo Gallery

 <i>Household waste discharged openly in Sharifabad –Tehsil AHmedpur Sial</i>	 <i>in warra Tattha- tehsil Bhowana</i> FGD
 <i>Chak 13-L –Ahmedpur sial</i>	 <i>waste water discharged into agro field in SP12- Pakpattan</i>
 <i>Household waste water discharged openly in Warra Thatta – tehsil Bhowana</i>	 <i>informal discussion with a women villager in Darutta, Tehsil Bhowana</i>
 <i>FGD with community of Chak 240- Tehsil Bhowana</i>	

	 <i>Household waste water discharged openly in Mari Amb Pakpattan Sharif</i>
	 <i>Pitholes to collect household grey water in Farid Kot-Tehsil Pakpattan</i>
 <i>Open drainage posing serious health issues among children in SP 12-Tehsil Pakpattan Sharif</i>	 <i>meeting with Assistant Commissioner of Tehsil Bhowana</i>
 <i>pit holes were made to collect grey water in SP-12, tehsil pakpattan</i>	









Meeting with govt officials- tehsil taunsa



community consultation in Kala bagh tehsil mianwali

Annexure N Environmental & Social Screening Checklist**Instructions:**

This checklist focuses on environmental issues and social concerns. To ensure that social dimensions are adequately considered, Involuntary Resettlement Screening Checklist will also be used
(iii) The purpose of this E&S Screening Checklists is to identify potential “Negative” impacts of environmental and social attributes or to enhance the existing environmental & social benefits. Use the “remarks” section to discuss any anticipated mitigation measures.

Name of TC:**Sub-Project Sector:****Sub-Project Title:****Sub- Project Categorization:****E-1****S-1****E-2****S-2****E-3****S-3****Date of Screening:**

Screening Questions	Yes	No	Remarks
A. Project Siting			
Is the Sub-Project area adjacent to or within any of the following:			
Environmentally sensitive areas?			
Legally protected Area			
Any surface water body (river, canal, stream, lake, wetland) within 250 meter of the proposed sub project ⁷²			
Estuarine			
Special area for protecting biodiversity			
Buffer zone of protected area			
Mangroves Forest			
Man-made forest /game reserve, orchid /crops or any other area of environmental importance			
Socially sensitive /important areas/communities/people?			

⁷² Ibid.

Screening Questions	Yes	No	Remarks
PCRs and or any site of cultural/religious importance (Graveyard, Shrine, Mosque, Church, <i>Gordwarah</i> , Temple, Fort, archeological/historical site) within 100 m of the proposed subproject ⁷³			
Sensitive receptors (Schools, colleges, hospitals and clinics) within 100 meter of the proposed sub project ⁷⁴			
Any graveyard of local community (Muslims or Christians)			
Any demographic or socio-economic aspects of the sub-project area that are already vulnerable (e.g., high incidence of marginalized populations, rural-urban migrants, illegal settlements, squatters, ethnic minorities, people with disabilities, people in old age, socially isolated segments ⁷⁵ of the society and women or children)?			
Already existing infrastructure ⁷⁶ (including public amenities) which may be required to dismantle or may be affected temporarily by any means?			
B. Potential Environmental Impacts Will the Sub-Project cause...			
1. Disturbance to habitats/biodiversity of environmentally sensitive or protected areas?			
2. Cutting of trees?			
3. Disruption to habitats/biodiversity of surrounding ecosystem/environment?			
4. Generation of wastewater during construction or operation?			
5. Pollution of surface water/ground water due to wastewater discharge from construction site or due to direct/indirect disposal of waste water?			
6. Alteration of surface water hydrology of waterways resulting in increased sediment in streams/rivers or due to increased soil erosion at construction site?			
7. Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?			
8. Over pumping of ground water, leading to salinization and ground subsidence?			

⁷³ According to Environmental Assessment Guidelines adopted by Punjab EPA

⁷⁴ Ibid.

⁷⁵ due to caste, creed, religion or gender e.g. transgender

⁷⁶ Sewerage /Drainage system, Water supply lines, tube-wells, WAPDA/Telephone transmission lines/electric poles, Railway tracks, Gas pipelines, Roads, Shops/Plazas, Banks, Industry, Disposal stations etc.

Screening Questions	Yes	No	Remarks
9. Serious contamination of soil due to construction works?			
10. Aggravation of solid waste problems in the area?			
11. Generation of hazardous waste?			
12. Increased air pollution due to sub-project construction and operation?			
13. Noise and vibration due to sub-project construction or operation?			
14. Creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents due to solid/liquid?			
15. Use of chemicals during construction?			
C: Potential Social Impacts Will the Sub-Project cause...			
1. Impairment of historical/cultural areas; disfiguration of landscape or potential loss/damage to Physical Cultural Resources (PCRs)?			
2. If land is required on Voulnatray basis (If “Yes”, please also fill Voluntary Land Donation Checklist) verification that VLD is less than 10% of land holding.			
3. Displacement or involuntary resettlement of people? (physical displacement and/or economic displacement) (If “Yes”, please also fill Involuntary Resettlement Screening Checklist)			
4. Disproportionate impacts on the poor, women and children and or other vulnerable groups ⁷⁷ (mentioned above)?			
5. Temporary impediments in movements of people/transport and animals?			
6. Large labor influx during sub-project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			

⁷⁷ Women, Children, Women headed households, People in old age, people having disabilities, socially isolated community groups and or people living below the poverty line, hawkers, collecting recyclables.

Screening Questions	Yes	No	Remarks
7. what is the number of laborers required for the sub-project			
8. Risks of child labor and SEA/SH in the sub-project areas			
9. Social conflicts if workers from other areas are hired?			
10. Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?			
11. Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?			
12. Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?			
13. Any impact on sensitive receptors (mentioned above)			
14. Any impact of negative nature on already existing infrastructure including public amenities			

Prepared By:

Name:

Signature:

Date:

Endorsed By:

Name:

Signature:

Date:

Annexure O: Chance Find Procedures

Contracts for civil works involving excavations should normally incorporate procedures for dealing with situations in which buried PCR are unexpectedly encountered. The final form of these procedures will depend upon the local regulatory environment, including any chance find procedures already incorporated in legislation dealing with antiquities or archaeology.

Note: The case for which the general guidance below is provided applies where there will be an archaeologist on call. In exceptional situations in which excavations are being carried out within PCR rich areas such as a UNESCO World Heritage site, there will often be an archaeologist on site to monitor the excavations and make decisions on-site. Such cases would require a modified version of these procedures, to be agreed with the cultural authorities.

Chance finds procedures commonly contain the following elements:

1. PCR Definition

This section should define the types of PCR covered by the procedures. In some cases the Chance finds procedure is confined to archaeological finds; more commonly it covers all types of PCR. In the absence of any other definition from the local cultural authorities, the following definition could be used: "movable or immovable objects, sites, structures or groups of structures having archaeological paleontological historical architectural religious, aesthetic, or other cultural significance".

2. Ownership

This paragraph should state the identity of the owner of the artifacts found. Depending on the circumstances, the owner could typically be, for example, the state, the government, a religious institution, the land owner, or could be left for later determination by the concerned authorities.

3. Recognition

This is the most difficult aspect to cover. As noted above, in PCR-sensitive areas, the procedure may require the contractor to be accompanied by a specialist. In other cases, the procedures may not specify how the contractor will recognize a PCR, and a clause may be requested by the contractor disclaiming liability.

Procedure upon Discovery

Suspension of Work

This paragraph may state that if a PCR comes to light during the execution of the works, the contractor shall stop the works. However, it should specify whether all works should be stopped, or only the works immediately involved in the discovery, or, in some cases where large buried structures may be expected, all works may be stopped within a specified distance (for example, 50 meters) of the discovery. This issue should be informed by a qualified archaeologist.

After stopping work, the contractor must immediately report the discovery to the Resident Engineer. The contractor may not be entitled to claim compensation for work suspension during this period. The Resident Engineer may be entitled to suspend work and to request from the contractor some excavations at the contractor's expense if he thinks that a discovery was made and not reported.

Demarcation of the Discovery Site

With the approval of the Resident Engineer, the contractor is then required to temporarily demarcate, and limit access to, the site.

Non-Suspension of Work

The procedure may empower the Resident Engineer to decide whether the per can be removed and for the work to continue, for example in cases where the find is one coin.

Chance Find Report

The contractor should then, at the request of the Resident Engineer, and within a specified time period, make a Chance Find Report, recording:

- Date and time of discovery;
- Location of the discovery;
- Description of the per;
- Estimated weight and dimensions of the per;
- Temporary protection implemented.

The Chance Find Report should be submitted to the Resident Engineer, and other concerned parties as agreed with the cultural authority, and in accordance with national legislation. The Resident Engineer, or other party as agreed, is required to inform the cultural authority accordingly.

Arrival and Actions of Cultural Authority

The cultural authority undertakes to ensure that a representative will arrive at the discovery site within an agreed time such as 24 hours, and determine the action to be taken. Such actions may include, but not be limited to:

- Removal of PCR deemed to be of significance;
- Execution of further excavation within a specified distance of the discovery point;
- Extension or reduction of the area demarcated by the contractor.

These actions should be taken within a specified period, for example, 7 days. The contractor may not be entitled to claim compensation for work suspension during this period.

If the cultural authority fails to arrive within the stipulated period (for example, 24 hours), the Resident Engineer may have the authority to extend the period by a further stipulated time. If the cultural authority fails to arrive after the extension period, the Resident Engineer may have the authority to instruct the contractor to remove the PCR or undertake other mitigating measures and resume work. Such additional works can be charged to the contract. However, the contractor may not be entitled to claim compensation for work suspension during this period.

Further Suspension of Work

During this 7-day period, the Cultural authority may be entitled to request the temporary suspension of the work at or in the vicinity of the discovery site for an additional period of up to, for example, 30 days. The contractor may, or may not be, entitled to claim compensation for work suspension during this period.

However, the contractor will be entitled to establish an agreement with the cultural authority for additional services or resources during this further period under a separate contract with the cultural authority.

Annexure P: Comparison of Alternatives

Water Supply

For the proposed water supply solutions under the Study, the Consultants have addressed design for

- a)** Multi-village System (MVS)
- b)** Single-village System (SVS)
- c)** Stand-Post
- d)** Skimming Well
- e)** Rainwater Harvest

For water supply, the solutions account for options based on

trunk level connectivity of major settlements through pumpage of freshwater lenses

isolated solutions for scattered settlements that cannot avail trunk level connects but overlie freshwater lenses

areas with thin freshwater lenses that could only be mined with scavenger wells unlikely to cause any significant drawdown

rainwater harvest for areas unlikely to sustain fresh groundwater harvest.

The above arrangements assume chlorinated water storage and delivery.

a) Multi Village system

Trunk level connects sponsor solutions recognized under the Client interpretation of '**Multi Village System**' (**MVS**) where one principal settlement in each revenue mauza is recognized as a contributing service area to a collective configuration of between 6-8 mauzas. Typical water allowance is 70 Lpcd and system storages are meant to preserve gravity heads in the main trunk. The system is meant to cater to 16-18 hour/day supply which is atypical of rural regimes. Each principal settlement is expected to have population > 2,000 persons (> 350 households)

The arrangement is akin to touching base with the major population units in maximum number of mauzas that could have access to freshwater seepage from large irrigation channels. Given the number of participating settlements, the issue of sustainability is paramount and so is the water quality. The ultimate service catchment across multiple mauzas is expected to have a population of 25k-30k (6-8 mauzas) where the cost of the water supply component works is in equal proportion to the number of mauzas constituting the solution. Thus, as part of the multi-village solution, sample mauza is expected to bear its equal share of proportionate cost against overall component estimates of all other participating mauzas.

In certain cases, the service population of 25k-30k persons is difficult to meet due to wide scattering of the settlements and the small number of inhabitants per settlement. As such, an MVS

solution would fail to achieve the preferred cluster of households per target settlement. In an effort to close the gap towards target population, an MVS solution would not only take the principal settlements, one each, from the mauza cluster but also include secondary settlements that are in geographic proximity to the solution network. Thus, there would be principal settlements (not necessarily 2,000 or more persons) and secondary settlements that would collectively aim to have a larger service population than would have been possible under just the principal settlements. These variant solutions would also be part of the recommendations under MVS configurations.

b) Single Village System' (SVS)

For major settlements that could not benefit from a piped water solution owing to limitations of system hydraulics under MVS and also the inherent large distance from zones of constant seepage, such as canal water source, the service profile conforms to a solution called '**Single Village System' (SVS)** that operates under the assumption that

- there exists a freshwater lens underneath the large settlement (population 1k-2k)
- stable water harvest could be realized

The system is capacitated by a tube-well bore and a low-level reservoir of 2,500-gallon capacity that permits centralized/communal water withdrawals exclusive to drinking water requirements (water allowance 5 Lpcd). Under better coverage options, multiple communal supply points may be configured to permit easy access to denizens over short walking distance.

c) Stand Pot

For service areas with under 500 resident persons and assuming presence of freshwater lens in the aquifer, a **Stand-Post** with disinfection facility could be offered. The number of prospective settlements would be identified on singular basis with number of households between 20-50 such that a local arrangement could be retrofitted against a communal point of delivery. The source would be a private bore between 0.05-0.10 cusec discharge. The solution is recognized as a Stand-post in common parlance. This is a low volume delivery system (3-5 Lpcd) with proximal location of network components

d) Skimming Well

Where a solution is required across a recognized saline zone with known pockets freshwater lensing in strata, the main hydrological bearing would be on mining of the water bearing aquifer that does not disturb the delicate water balance. This is realized on the basis of low potency scavenger wells (more like private bores with 1–2-inch delivery pipes) that penetrate the freshwater lends in the periphery of a low head central storage tank. Typically, 3-5 **skimming wells**, spaced 50-100 ft. apart, jointly contribute to the common storage, preferably in alternating sequence of pumpage. If the water harvest is not irrational in volume, the sustenance of this mechanism is not an issue assuming that local drawdowns would be compensated by lateral flows migrating to the suction points. The flows are typically 3-5 l/s per well. For a total joint operational time of 2 hours per day (1/2 hr/well), the flow volume is in excess of 6,000 gallons, enough to satisfy a population of 5,000 @ 5 Lpcd (drinking water only). Since the collection is also very likely on account of cooking and utensil wash, the service population would reduce to around 2,000 persons on a daily basis.

e) Rainwater Harvesting

In areas where freshwater availability is acutely short, the Consultants would recommend active recharge mechanism through household level rooftop ‘**rainwater harvesting**’. The collection estimates would vary, but it is safe to assume that rainfall intensity across even the dry zones would enable collection across sporadic events. In design, rooftop water is routed through gutters to an underground brick lined settling tank that serially connects to a commercially available fiberglass tank fitted with a low hp suction pump for draw-off arrangement. The settling tank has a bypass arrangement to avoid overflows in the system.

The abovementioned options are qualified against specified configurations and volumes of water use. The configurations could be modified and tailored to suit local design needs that are in turn governed by the geographic distribution of the preferred service model and concentration of population.

Waste water Treatment

For wastewater treatment and disposal, the proposed sewage collection and treatment. The configuration satisfies gravity flow up to the wet well where onwards .is made by taking into consideration many factors. The system is connected in a way that would satisfy the gravity flow up to the pumping station and there onwards to **Anaerobic Baffled Reactor (ABR) / Bio-Trickling Filter (BTF)**. ABRs are septic tanks that have been upgraded with a series of baffles along the treatment chamber. The up-flow chambers provide enhanced removal and digestion of organic matter. ABRs are based on a physical treatment (settling) and a biological treatment (anaerobic digestion).

ABR / BTF have been proposed for local wastewater treatment according to the design criteria. These technologies are easily adaptable to larger catchments.

ABR / BTF are well suited for rural areas as no trained technician is required to operate and maintain the system. The maintenance is limited to the removal of accumulated sludge and scum every 1 to 3 years.

Soakage well configuration is flexible towards volumetric variations and is particularly suited to small catchments. Moreover, the technology is well suited for small catchments of rural areas. Critical design parameters for septic tanks include hydraulic retention time (HRT) of 48 hours against three up-flow chambers. The up-flow chambers provide enhanced removal and digestion of organic matter.

Material Choices

HDPE pipes for rising main and distribution network have been proposed considering longevity, durability and ease of installation with subsequent low O&M cost. The comparative configuration with other material choices is shown in **Error! Reference source not found..**

Comparison of Commercially available Water Supply Pipes

Sr.	Description	HDPE	GRP	DI	MS
-----	-------------	------	-----	----	----

No.					
1	Technical Viability	Yes	Yes	Yes	Yes
2	Initial Capital Cost	Low	Med	High	Med
3	Local Manufacturing	Yes	No	No	Yes
4	Lining & Coating Cost	No	No	Med	High
5	Installation / Fixing Cost	Low	Med	High	High
6	Corrosion Protection Cost	No	No	Med	High
7	Leak free joint	Yes	No	No	No
8	Site Fabrication & Fittings	No	No	No	Yes
9	Flexibility and deflection	High, can be bent to a radius 25 times the nominal pipe diameter	Low	Low	Med

Annexure Q: 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 Implementation & Management Unit-PRSWSSP, Local Government 7 Community Development Department , 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.

- 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.
- Whereas the Title Holder testifies that the land is free of Tenants, squatters or encroachers, not subject to other claims/ claimants and does not obstruct access to other people’s land or livelihoods.
- Whereas the Title Holder hereby voluntarily surrenders the land/structure without any type of pressure, influence, coercion or payment what so ever directly or indirectly and hereby surrender all his/her subsisting rights in the said land with free will and intention. He/she will transfer the property to the CSO/Project office its ownership and use.
- Whereas the Recipient shall construct and develop infrastructure facilities under the project and take all possible precautions to avoid damage to adjacent land/structure/other assets
- Whereas both the parties agree that the infrastructure so constructed/developed shall be for public purpose.
- The land donated does not constitute more than 10% of the entire landholding of the donor/donors.

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
CNIC		
3. PIMU-LG&CDD Representative	Name	Signature
Project Director	CNIC	

Annexure R: Involuntary Resettlement Screening Checklist**Name of City/MC/LG :****Sub-Project Sector:****Sub-Project Title:****Sub- Project Categorization: S-1****S-2****Date of Screening:**

SECTION 1	Yes	No	Expected	Remarks
Does the project require land acquisition? Yes/No				
If yes, then describe the type of land being acquired from the categories below:				
Has any AED been conducted at the proposed location by the government ⁷⁸ ? Yes/No				The sub-projects have to avoid all locations where any government led AED has been conducted.
Land (Quantify and describe types of land being acquired in “remarks column”).				
Government and LG owned land free of occupation (agriculture or settlement)				
Government or state-owned land (other than LG) free of occupation (agriculture or settlement)				
Private land				
Residential				
Commercial				
Agricultural				
Communal				
Others (specify in “remarks”).				
Name of owner/owners and type of ownership document if available.				
If land is being acquired, describe any structures constructed on it				
Land-based assets:				
Residential structures				

⁷⁸ The sub-projects have to avoid all locations where any government led AED has been conducted.

Commercial structures (specify in “remarks”)				
Community structures (specify in “remarks”)				
Agriculture structures (specify in “remarks”)				
Public utilities (specify in “remarks”)				
Others (specify in “remarks”)				
If agricultural land is being acquired, specify the following:				
Agriculture related impacts				
Crops and vegetables (specify types and cropping area in “remarks”).				
Trees (specify number and types in “remarks”).				
Others (specify in “remarks”).				
Affected Persons (APs)				
Will any people be displaced from the land when acquired? Yes/No				
Number of APs				
Males				
Females				
Titled landowners				
Tenants and sharecroppers				
Leaseholders				
Agriculture wage laborers				
Encroachers and squatters (specify in remarks column)				
Vulnerable APs (e.g. women headed households, minors and aged, orphans, disabled persons, and those below the poverty line). Specify the number and vulnerability in “remarks”.				
Others (specify in “remarks”)				
How will people be affected?				

Prepared By:**Endorsed By:****Name:****Name:**

Signature:

Date:

Signature:

Date:

PRSWSSP

Annexure S: Template of Environmental and Social Management Plan (ESMP)

When a subproject includes distinct mitigation measures (physical works or management activities), an Environmental and Social Management Plan (ESMP) needs to be included with the subproject application.

ESMP General Format/ Contents:

An ESMP will include the following components:

- Description of Sub-Project Introduction and details of proposed activities: Sub-project location, components, and proposed activities, estimated time duration etc.
- Description of existing environmental conditions: Physical, biological, and socio-economic conditions of the area where sub-project is proposed to be executed
- Description of adverse environmental and social impacts: The anticipated effects are identified and summarized.
- Description of mitigation measures: Each measure is described with reference to the effect(s) it is intended to deal with. As needed, detailed plans, designs, equipment descriptions, and operating procedures are described.
- Description of monitoring Project: Monitoring provides information on the occurrence of environmental and social effects. It helps identify how well mitigation measures are working, and where better mitigation may be needed. The monitoring Project should identify what information will be collected, how, where and how often. It should also indicate at what level of effect there will be a need for further mitigation. How environmental and social effects are monitored is discussed below.
- Responsibilities, Capacity Development and Training: The people, groups, or organizations that will carry out the mitigation and monitoring activities are defined, as well as to whom they report and are responsible. There may be a need to train people to carry out these responsibilities, and to provide them with equipment and supplies.
- Implementation schedule: The timing, frequency and duration of mitigation measures and monitoring are specified in an implementation schedule, and linked to the overall subproject schedule.
- Cost estimates and sources of funds: This are specified for the initial subproject investment and for the mitigation and monitoring activities as a subproject is implemented. Funds to implement the EMP may come from the subproject grant, from the community, or both. Government agencies and NGOs may be able to assist with monitoring.

Monitoring Methods:

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

Methodology

The sector 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 surveys 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 sub-projects.
- ESMP compilation – documenting the process and outcome of the study.

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.
- Grievances redress mechanism (GRM).
- ESMP implementation budget, providing the cost estimate of its implementation.

ESMP Format

The ESMP for each sub-project will include the following:

1. Introduction
2. Project Description
3. Legal and Policy Framework
4. Environmental and Social Baselines
5. Social Impact Assessment (in case of Involuntary Resettlement which is not likely or Indigenous People)
6. Stakeholder Consultations
7. Environmental and Social Screening
8. Environmental and Social Impact Assessment and Mitigation
9. Environmental and Social Management and Monitoring Plan
10. Institutional Arrangements
11. Grievance Redress Mechanism

Annexure T: Environmental & Social Monitoring Checklist

Name of the Sub-project:

Date of Visit:

Sr. #	Environmental & Social issues	Mitigation Measure	Means of Monitoring	Result Indicator	Status of Mitigation Measure be adopted		Remarks
					Yes	No	
A. Site Inspections							
1.	Noise	Use of machinery & Equipment having less noise.	Visual Inspection				
		Timely tuning of Vehicles/Machinery	Any complaint from the local residents				
2.	Fugitive Dust	Provision for personal protective equipment (PPEs) i.e. Mask	Visual Inspection				
		Sprinkling of water	Visual Inspection to ensure water sprinkling is being implemented				
3.	Waste ⁷⁹ Management	Immediately transport the accumulated construction waste to a site identified by the concerned authority	Visual inspection that solid waste is disposed-off at designated site				
			Any complaint from the local residents				
B. EHS Management for Labor and Worker							
4.	Health, Safety and Environmental SOPs for Labor	Labor Camp Management					
		Located 01 KM away from any community.	Inspection of location of labor camp				
		Labor facilitated with potable water, Hygienic sanitary facilities and comfortable	Visual Inspection				

⁷⁹ .Debris and excavated material or packing/unpacking materials related to

Sr. #	Environmental & Social issues	Mitigation Measure	Means of Monitoring	Result Indicator	Status of Mitigation Measure be adopted		Remarks
					Yes	No	
		livings with heating & cooling facilities.					
		Provided with sewage treatment facility i.e. Septic Tanks & Soakage Pits ⁸⁰	Visual Inspection				
		Proper management of solid waste and garbage					
		Provided with firefighting station i.e Fire extinguishers (DCP), Fire buckets, Spade, Fire Buzzer etc.	Visual Inspection				
		Provided with hygiene mess facility for labor.	Visual Inspection				
		Provided with health care facilities					
		Separate rooms. toilets and health and hygiene facilities in case of women labor residents at labor camp					
		Construction Site Management					
		Adequate safety precautions (PPEs) such as helmets, safety shoes, gloves, etc. should be provided to the labor	Inspection of usage of Personal Protective Equipment during execution				
		Contractor shall provide health care facility at site i.e First Aid Box, Ambulance	Visual Inspection				

⁸⁰ .In case of absence of sewerage/drainage system and flush toilets

Sr. #	Environmental & Social issues	Mitigation Measure	Means of Monitoring	Result Indicator	Status of Mitigation Measure be adopted		Remarks
					Yes	No	
		etc. onsite as well as at labor campsite.					
		Children of less than 14 years of age and pregnant women are not hired.	Visual Inspection				
		Construction site safety ensured by Contractor. i.e. Safety Barricades, Safety Cones, Safety Boards etc.	Visual Inspection				
		check if children under 18 are not engaged in hazardous work	Visual Inspection, Attendance record, other records and interview workers and supervisors				
		If workers are paid at lease minimum wage with no discrimination (equal work equal pay).					
		child labor question (children under 14 are not employed)					
		C. Environment, Health ,Safety and Social Issues Management of Community					
5.	Public Consultation	Local residents will be consulted before and during execution phase regarding their views i-e, either they are satisfied with the Contractor's activities or not and grievance (if any)	Consultation with local residents/community				
6.	Vehicles Movement and Physical Obstructions	Provision of alternative routes	Visual inspection to see whether proper traffic signs, safety barriers/ safety strips for traffic management are placed				
		Indicators/signboards regarding alternate routes and other instructions be provided at proper distance.					

Sr. #	Environmental & Social issues	Mitigation Measure	Means of Monitoring	Result Indicator	Status of Mitigation Measure be adopted		Remarks
					Yes	No	
		Display of emergency contact numbers					
7.	Infrastructure Losses i-e, loss of land, damage to structures, damage to plants etc.	Complaint from the local residents	Record of any grievance and mode of compensation provided				
		In case of any losses Contractor should compensate the owner immediately					
8.	Obstruction in public access	Provision of alternate routes	Visual inspection Record of public grievance				
		Wooden blocks/ramps will be provided for safe passage of pedestrians/locals etc.	Visual inspection Record of public grievance				
9.	Privacy Issues	Workers should be trained to address privacy issues and ethically behaved.	Visual inspection and record of grievance				
10.	Economic Losses	In case of obstruction of passage, shopkeepers/local businesses may affect, alternate routes will be provided. In case of any loss, compensation will be provided by the Contractor	Record of Public Grievance Visual Inspection				
D. COVID-19 Related SOPs of Government of Punjab at Construction Sites⁸¹							
11.	Covid-19 SOPs Implementation	Usage of surgical face mask by workers	Visual Inspection				

⁸¹ .will be applicable during the pandemic

Sr. #	Environmental & Social issues	Mitigation Measure	Means of Monitoring	Result Indicator	Status of Mitigation Measure be adopted		Remarks
					Yes	No	
		Keep social distancing/avoid gatherings of workers	Visual Inspection				
		Provision of hand washing facility onsite for workers	Visual Inspection				
12.	Any other Issue						

Monitored by:

Name: -----

Designation: -----

Date: -----

Annexure U: ESM/Safeguards Interim Note:COVID-19 Considerations in construction/civil works projects

INTERIM GUIDANCE ON COVID-19

VERSION 1: APRIL 7, 2020

ESF/SAFEGUARDS INTERIM NOTE: COVID-19 CONSIDERATIONS IN CONSTRUCTION/CIVIL WORKS PROJECTS

This note was issued on April 7, 2020 and includes links to the latest guidance as of this date (e.g. from WHO). Given the COVID-19 situation is rapidly evolving, when using this note it is important to check whether any updates to these external resources have been issued.

1. INTRODUCTION

The COVID-19 pandemic presents Governments with unprecedented challenges. Addressing COVID-19 related issues in both existing and new operations starts with recognizing that this is not business as usual and that circumstances require a highly adaptive responsive management design to avoid, minimize and manage what may be a rapidly evolving situation. In many cases, we will ask Borrowers to use reasonable efforts in the circumstances, recognizing that what may be possible today may be different next week (both positively, because more supplies and guidance may be available, and negatively, because the spread of the virus may have accelerated).

This interim note is intended to provide guidance to teams on how to support Borrowers in addressing key issues associated with COVID-19, and consolidates the advice that has already been provided over the past month. As such, it should be used in place of other guidance that has been provided to date. This note will be developed as the global situation and the Bank's learning (and that of others) develops. This is not a time when 'one size fits all'. More than ever, teams will need to work with Borrowers and projects to understand the activities being carried out and the risks that these activities may entail. Support will be needed in designing mitigation measures that are implementable in the context of the project. These measures will need to take into account capacity of the Government agencies, availability of supplies and the practical challenges of operations on-the-ground, including stakeholder engagement, supervision and monitoring. In many circumstances, communication itself may be challenging, where face-to-face meetings are restricted or prohibited, and where IT solutions are limited or unreliable.

This note emphasizes the importance of careful scenario planning, clear procedures and protocols, management systems, effective communication and coordination, and the need for high levels of responsiveness in a changing environment. It recommends assessing the current situation of the project, putting in place mitigation measures to avoid or minimize the chance of infection, and planning what to do if either project workers become infected or the work force includes workers from proximate communities affected by COVID-19. In many projects, measures to avoid or minimize will need to be implemented at the same time as dealing with sick workers and relations with the community, some of whom may also be ill or concerned about infection. Borrowers should understand the obligations that contractors have under their existing contracts (see Section 3), require contractors to put in place appropriate organizational structures (see Section 4) and develop procedures to address different aspects of COVID-19 (see Section 5).

2. CHALLENGES WITH CONSTRUCTION/CIVIL WORKS

Projects involving construction/civil works frequently involve a large work force, together with suppliers and supporting functions and services. The work force may comprise workers from international, national, regional, and local labor markets. They may need to live in on-site accommodation, lodge within communities close to work sites or return to their homes after work. There may be different contractors

1

INTERIM GUIDANCE ON COVID-19

VERSION 1: APRIL 7, 2020

permanently present on site, carrying out different activities, each with their own dedicated workers. Supply chains may involve international, regional and national suppliers facilitating the regular flow of goods and services to the project (including supplies essential to the project such as fuel, food, and water). As such there will also be regular flow of parties entering and exiting the site; support services, such as catering, cleaning services, equipment, material and supply deliveries, and specialist sub-contractors, brought in to deliver specific elements of the works.

Given the complexity and the concentrated number of workers, the potential for the spread of infectious disease in projects involving construction is extremely serious, as are the implications of such a spread. Projects may experience large numbers of the work force becoming ill, which will strain the project's health facilities, have implications for local emergency and health services and may jeopardize the progress of the construction work and the schedule of the project. Such impacts will be exacerbated where a work force is large and/or the project is in remote or under-served areas. In such circumstances, relationships with the community can be strained or difficult and conflict can arise, particularly if people feel they are being exposed to disease by the project or are having to compete for scarce resources. The project must also exercise appropriate precautions against introducing the infection to local communities.

3. DOES THE CONSTRUCTION CONTRACT COVER THIS SITUATION?

Given the unprecedented nature of the COVID-19 pandemic, it is unlikely that the existing construction/civil works contracts will cover all the things that a prudent contractor will need to do. Nevertheless, the first place for a Borrower to start is with the contract, determining what a contractor's existing obligations are, and how these relate to the current situation.

The obligations on health and safety will depend on what kind of contract exists (between the Borrower and the main contractor; between the main contractors and the sub-contractors). It will differ if the Borrower used the World Bank's standard procurement documents (SPDs) or used national bidding documents. If a FIDIC document has been used, there will be general provisions relating to health and safety. For example, the standard FIDIC, Conditions of Contract for Construction (Second Edition 2017), which contains no 'ESF enhancements', states (in the General Conditions, clause 6.7) that the Contractor will be required:

- to take all necessary precautions to maintain the health and safety of the Contractor's Personnel
- to appoint a health and safety officer at site, who will have the authority to issue directives for the purpose of maintaining the health and safety of all personnel authorized to enter and or work on the site and to take protective measures to prevent accidents
- to ensure, in collaboration with local health authorities, that medical staff, first aid facilities, sick bay, ambulance services and any other medical services specified are available at all times at the site and at any accommodation
- to ensure suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics

These requirements have been enhanced through the introduction of the ESF into the SPDs (edition dated July 2019). The general FIDIC clause referred to above has been strengthened to reflect the requirements of the ESF. Beyond FIDIC's general requirements discussed above, the Bank's Particular Conditions include a number of relevant requirements on the Contractor, including:

INTERIM GUIDANCE ON COVID-19

VERSION 1: APRIL 7, 2020

- to provide health and safety training for Contractor's Personnel (which include project workers and all personnel that the Contractor uses on site, including staff and other employees of the Contractor and Subcontractors and any other personnel assisting the Contractor in carrying out project activities)
- to put in place workplace processes for Contractor's Personnel to report work situations that are not safe or healthy
- gives Contractor's Personnel the right to report work situations which they believe are not safe or healthy, and to remove themselves from a work situation which they have a reasonable justification to believe presents an imminent and serious danger to their life or health (with no reprisal for reporting or removing themselves)
- requires measures to be in place to avoid or minimize the spread of diseases including measures to avoid or minimize the transmission of communicable diseases that may be associated with the influx of temporary or permanent contract-related labor
- to provide an easily accessible grievance mechanism to raise workplace concerns

Where the contract form used is FIDIC, the Borrower (as the Employer) will be represented by the Engineer (also referred to in this note as the Supervising Engineer). The Engineer will be authorized to exercise authority specified in or necessarily implied from the construction contract. In such cases, the Engineer (through its staff on site) will be the interface between the PIU and the Contractor. It is important therefore to understand the scope of the Engineer's responsibilities. It is also important to recognize that in the case of infectious diseases such as COVID-19, project management – through the Contractor/subcontractor hierarchy – is only as effective as the weakest link. A thorough review of management procedures/plans as they will be implemented through the entire contractor hierarchy is important. Existing contracts provide the outline of this structure; they form the basis for the Borrower to understand how proposed mitigation measures will be designed and how adaptive management will be implemented, and to start a conversation with the Contractor on measures to address COVID-19 in the project.

4. WHAT PLANNING SHOULD THE BORROWER BE DOING?

Task teams should work with Borrowers (PIUs) to confirm that projects (i) are taking adequate precautions to prevent or minimize an outbreak of COVID-19, and (ii) have identified what to do in the event of an outbreak. Suggestions on how to do this are set out below:

- The PIU, either directly or through the Supervising Engineer, should request details in writing from the main Contractor of the measures being taken to address the risks. As stated in Section 3, the construction contract should include health and safety requirements, and these can be used as the basis for identification of, and requirements to implement, COVID-19 specific measures. The measures may be presented as a contingency plan, as an extension of the existing project emergency and preparedness plan or as standalone procedures. The measures may be reflected in revisions to the project's health and safety manual. This request should be made in writing (following any relevant procedure set out in the contract between the Borrower and the contractor).
- In making the request, it may be helpful for the PIU to specify the areas that should be covered. This should include the items set out in Section 5 below and take into account current and relevant

INTERIM GUIDANCE ON COVID-19

VERSION 1: APRIL 7, 2020

guidance provided by national authorities, WHO and other organizations. See the list of references in the Annex to this note.

- The PIU should require the Contractor to convene regular meetings with the project health and safety specialists and medical staff (and where appropriate the local health authorities), and to take their advice in designing and implementing the agreed measures.
- Where possible, a senior person should be identified as a focal point to deal with COVID-19 issues. This can be a work supervisor or a health and safety specialist. This person can be responsible for coordinating preparation of the site and making sure that the measures taken are communicated to the workers, those entering the site and the local community. It is also advisable to designate at least one back-up person, in case the focal point becomes ill; that person should be aware of the arrangements that are in place.
- On sites where there are a number of contractors and therefore (in effect) different work forces, the request should emphasize the importance of coordination and communication between the different parties. Where necessary, the PIU should request the main contractor to put in place a protocol for regular meetings of the different contractors, requiring each to appoint a designated staff member (with back up) to attend such meetings. If meetings cannot be held in person, they should be conducted using whatever IT is available. The effectiveness of mitigation measures will depend on the weakest implementation, and therefore it is important that all contractors and sub-contractors understand the risks and the procedure to be followed.
- The PIU, either directly or through the Supervising Engineer, may provide support to projects in identifying appropriate mitigation measures, particularly where these will involve interface with local services, in particular health and emergency services. In many cases, the PIU can play a valuable role in connecting project representatives with local Government agencies, and helping coordinate a strategic response, which takes into account the availability of resources. To be most effective, projects should consult and coordinate with relevant Government agencies and other projects in the vicinity.
- Workers should be encouraged to use the existing project grievance mechanism to report concerns relating to COVID-19, preparations being made by the project to address COVID-19 related issues, how procedures are being implemented, and concerns about the health of their co-workers and other staff.

5. WHAT SHOULD THE CONTRACTOR COVER?

The Contractor should identify measures to address the COVID-19 situation. What will be possible will depend on the context of the project: the location, existing project resources, availability of supplies, capacity of local emergency/health services, the extent to which the virus already exist in the area. A systematic approach to planning, recognizing the challenges associated with rapidly changing circumstances, will help the project put in place the best measures possible to address the situation. As discussed above, measures to address COVID-19 may be presented in different ways (as a contingency plan, as an extension of the existing project emergency and preparedness plan or as standalone procedures). PIUs and contractors should refer to guidance issued by relevant authorities, both national

INTERIM GUIDANCE ON COVID-19

VERSION 1: APRIL 7, 2020

and international (e.g. WHO), which is regularly updated (see sample References and links provided in the Annex).

Addressing COVID-19 at a project site goes beyond occupational health and safety, and is a broader project issue which will require the involvement of different members of a project management team. In many cases, the most effective approach will be to establish procedures to address the issues, and then to ensure that these procedures are implemented systematically. Where appropriate given the project context, a designated team should be established to address COVID-19 issues, including PIU representatives, the Supervising Engineer, management (e.g. the project manager) of the contractor and sub-contractors, security, and medical and OHS professionals. Procedures should be clear and straightforward, improved as necessary, and supervised and monitored by the COVID-19 focal point(s). Procedures should be documented, distributed to all contractors, and discussed at regular meetings to facilitate adaptive management. The issues set out below include a number that represent expected good workplace management but are especially pertinent in preparing the project response to COVID-19.

(a) ASSESSING WORKFORCE CHARACTERISTICS

Many construction sites will have a mix of workers e.g. workers from the local communities; workers from a different part of the country; workers from another country. Workers will be employed under different terms and conditions and be accommodated in different ways. Assessing these different aspects of the workforce will help in identifying appropriate mitigation measures:

- The Contractor should prepare a detailed profile of the project work force, key work activities, schedule for carrying out such activities, different durations of contract and rotations (e.g. 4 weeks on, 4 weeks off).
- This should include a breakdown of workers who reside at home (i.e. workers from the community), workers who lodge within the local community and workers in on-site accommodation. Where possible, it should also identify workers that may be more at risk from COVID-19, those with underlying health issues or who may be otherwise at risk.
- Consideration should be given to ways in which to minimize movement in and out of site. This could include lengthening the term of existing contracts, to avoid workers returning home to affected areas, or returning to site from affected areas.
- Workers accommodated on site should be required to minimize contact with people near the site, and in certain cases be prohibited from leaving the site for the duration of their contract, so that contact with local communities is avoided.
- Consideration should be given to requiring workers lodging in the local community to move to site accommodation (subject to availability) where they would be subject to the same restrictions.
- Workers from local communities, who return home daily, weekly or monthly, will be more difficult to manage. They should be subject to health checks at entry to the site (as set out above) and at some point, circumstances may make it necessary to require them to either use accommodation on site or not to come to work.

(b) ENTRY/EXIT TO THE WORK SITE AND CHECKS ON COMMENCEMENT OF WORK

Entry/exit to the work site should be controlled and documented for both workers and other parties, including support staff and suppliers. Possible measures may include:

INTERIM GUIDANCE ON COVID-19

VERSION 1: APRIL 7, 2020

- Establishing a system for controlling entry/exit to the site, securing the boundaries of the site, and establishing designating entry/exit points (if they do not already exist). Entry/exit to the site should be documented.
- Training security staff on the (enhanced) system that has been put in place for securing the site and controlling entry and exit, the behaviors required of them in enforcing such system and any COVID - 19 specific considerations.
- Training staff who will be monitoring entry to the site, providing them with the resources they need to document entry of workers, conducting temperature checks and recording details of any worker that is denied entry.
- Confirming that workers are fit for work before they enter the site or start work. While procedures should already be in place for this, special attention should be paid to workers with underlying health issues or who may be otherwise at risk. Consideration should be given to demobilization of staff with underlying health issues.
- Checking and recording temperatures of workers and other people entering the site or requiring self-reporting prior to or on entering the site.
- Providing daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures, using demonstrations and participatory methods.
- During the daily briefings, reminding workers to self-monitor for possible symptoms (fever, cough) and to report to their supervisor or the COVID-19 focal point if they have symptoms or are feeling unwell.
- Preventing a worker from an affected area or who has been in contact with an infected person from returning to the site for 14 days or (if that is not possible) isolating such worker for 14 days.
- Preventing a sick worker from entering the site, referring them to local health facilities if necessary or requiring them to isolate at home for 14 days.

(c) GENERAL HYGIENE

Requirements on general hygiene should be communicated and monitored, to include:

- Training workers and staff on site on the signs and symptoms of COVID-19, how it is spread, how to protect themselves (including regular handwashing and social distancing) and what to do if they or other people have symptoms (for further information see [WHO COVID-19 advice for the public](#)).
- Placing posters and signs around the site, with images and text in local languages.
- Ensuring handwashing facilities supplied with soap, disposable paper towels and closed waste bins exist at key places throughout site, including at entrances/exits to work areas; where there is a toilet, canteen or food distribution, or provision of drinking water; in worker accommodation; at waste stations; at stores; and in common spaces. Where handwashing facilities do not exist or are not adequate, arrangements should be made to set them up. Alcohol based sanitizer (if available, 60-95% alcohol) can also be used.
- Review worker accommodations, and assess them in light of the requirements set out in [IFC/EBRD guidance on Workers' Accommodation: processes and standards](#), which provides valuable guidance as to good practice for accommodation.
- Setting aside part of worker accommodation for precautionary self-quarantine as well as more formal isolation of staff who may be infected (see paragraph (f)).

INTERIM GUIDANCE ON COVID-19

VERSION 1: APRIL 7, 2020

(d) CLEANING AND WASTE DISPOSAL

Conduct regular and thorough cleaning of all site facilities, including offices, accommodation, canteens, common spaces. Review cleaning protocols for key construction equipment (particularly if it is being operated by different workers). This should include:

- Providing cleaning staff with adequate cleaning equipment, materials and disinfectant.
- Review general cleaning systems, training cleaning staff on appropriate cleaning procedures and appropriate frequency in high use or high-risk areas.
- Where it is anticipated that cleaners will be required to clean areas that have been or are suspected to have been contaminated with COVID-19, providing them with appropriate PPE: gowns or aprons, gloves, eye protection (masks, goggles or face screens) and boots or closed work shoes. If appropriate PPE is not available, cleaners should be provided with best available alternatives.
- Training cleaners in proper hygiene (including handwashing) prior to, during and after conducting cleaning activities; how to safely use PPE (where required); in waste control (including for used PPE and cleaning materials).
- Any medical waste produced during the care of ill workers should be collected safely in designated containers or bags and treated and disposed of following relevant requirements (e.g., national, WHO). If open burning and incineration of medical wastes is necessary, this should be for as limited a duration as possible. Waste should be reduced and segregated, so that only the smallest amount of waste is incinerated (for further information see [WHO interim guidance on water, sanitation and waste management for COVID-19](#)).

(e) ADJUSTING WORK PRACTICES

Consider changes to work processes and timings to reduce or minimize contact between workers, recognizing that this is likely to impact the project schedule. Such measures could include:

- Decreasing the size of work teams.
- Limiting the number of workers on site at any one time.
- Changing to a 24-hour work rotation.
- Adapting or redesigning work processes for specific work activities and tasks to enable social distancing, and training workers on these processes.
- Continuing with the usual safety trainings, adding COVID-19 specific considerations. Training should include proper use of normal PPE. While as of the date of this note, general advice is that construction workers do not require COVID-19 specific PPE, this should be kept under review (for further information see [WHO interim guidance on rational use of personal protective equipment \(PPE\) for COVID-19](#)).
- Reviewing work methods to reduce use of construction PPE, in case supplies become scarce or the PPE is needed for medical workers or cleaners. This could include, e.g. trying to reduce the need for dust masks by checking that water sprinkling systems are in good working order and are maintained or reducing the speed limit for haul trucks.
- Arranging (where possible) for work breaks to be taken in outdoor areas within the site.
- Consider changing canteen layouts and phasing meal times to allow for social distancing and phasing access to and/or temporarily restricting access to leisure facilities that may exist on site, including gyms.

INTERIM GUIDANCE ON COVID-19

VERSION 1: APRIL 7, 2020

- At some point, it may be necessary to review the overall project schedule, to assess the extent to which it needs to be adjusted (or work stopped completely) to reflect prudent work practices, potential exposure of both workers and the community and availability of supplies, taking into account Government advice and instructions.

(f) PROJECT MEDICAL SERVICES

Consider whether existing project medical services are adequate, taking into account existing infrastructure (size of clinic/medical post, number of beds, isolation facilities), medical staff, equipment and supplies, procedures and training. Where these are not adequate, consider upgrading services where possible, including:

- Expanding medical infrastructure and preparing areas where patients can be isolated. Guidance on setting up isolation facilities is set out in [WHO interim guidance on considerations for quarantine of individuals in the context of containment for COVID-19](#). Isolation facilities should be located away from worker accommodation and ongoing work activities. Where possible, workers should be provided with a single well-ventilated room (open windows and door). Where this is not possible, isolation facilities should allow at least 1 meter between workers in the same room, separating workers with curtains, if possible. Sick workers should limit their movements, avoiding common areas and facilities and not be allowed visitors until they have been clear of symptoms for 14 days. If they need to use common areas and facilities (e.g. kitchens or canteens), they should only do so when unaffected workers are not present and the area/facilities should be cleaned prior to and after such use.
- Training medical staff, which should include current WHO advice on COVID-19 and recommendations on the specifics of COVID-19. Where COVID-19 infection is suspected, medical providers on site should follow [WHO interim guidance on infection prevention and control during health care when novel coronavirus \(nCoV\) infection is suspected](#).
- Training medical staff in testing, if testing is available.
- Assessing the current stock of equipment, supplies and medicines on site, and obtaining additional stock, where required and possible. This could include medical PPE, such as gowns, aprons, medical masks, gloves, and eye protection. Refer to WHO guidance as to what is advised (for further information see [WHO interim guidance on rational use of personal protective equipment \(PPE\) for COVID-19](#)).
- If PPE items are unavailable due to world-wide shortages, medical staff on the project should agree on alternatives and try to procure them. Alternatives that may commonly be found on construction sites include dust masks, construction gloves and eye goggles. While these items are not recommended, they should be used as a last resort if no medical PPE is available.
- Ventilators will not normally be available on work sites, and in any event, intubation should only be conducted by experienced medical staff. If a worker is extremely ill and unable to breathe properly on his or her own, they should be referred immediately to the local hospital (see (g) below).
- Review existing methods for dealing with medical waste, including systems for storage and disposal (for further information see [WHO interim guidance on water, sanitation and waste management for COVID-19](#), and [WHO guidance on safe management of wastes from health-care activities](#)).

INTERIM GUIDANCE ON COVID-19

VERSION 1: APRIL 7, 2020

(g) LOCAL MEDICAL AND OTHER SERVICES

Given the limited scope of project medical services, the project may need to refer sick workers to local medical services. Preparation for this includes:

- Obtaining information as to the resources and capacity of local medical services (e.g. number of beds, availability of trained staff and essential supplies).
- Conducting preliminary discussions with specific medical facilities, to agree what should be done in the event of ill workers needing to be referred.
- Considering ways in which the project may be able to support local medical services in preparing for members of the community becoming ill, recognizing that the elderly or those with pre-existing medical conditions require additional support to access appropriate treatment if they become ill.
- Clarifying the way in which an ill worker will be transported to the medical facility, and checking availability of such transportation.
- Establishing an agreed protocol for communications with local emergency/medical services.
- Agreeing with the local medical services/specific medical facilities the scope of services to be provided, the procedure for in-take of patients and (where relevant) any costs or payments that may be involved.
- A procedure should also be prepared so that project management knows what to do in the unfortunate event that a worker ill with COVID-19 dies. While normal project procedures will continue to apply, COVID-19 may raise other issues because of the infectious nature of the disease. The project should liaise with the relevant local authorities to coordinate what should be done, including any reporting or other requirements under national law.

(h) INSTANCES OR SPREAD OF THE VIRUS

WHO provides detailed advice on what should be done to treat a person who becomes sick or displays symptoms that could be associated with the COVID-19 virus (for further information see [WHO interim guidance on infection prevention and control during health care when novel coronavirus \(nCoV\) infection is suspected](#)). The project should set out risk-based procedures to be followed, with differentiated approaches based on case severity (mild, moderate, severe, critical) and risk factors (such as age, hypertension, diabetes) (for further information see [WHO interim guidance on operational considerations for case management of COVID-19 in health facility and community](#)). These may include the following:

- If a worker has symptoms of COVID-19 (e.g. fever, dry cough, fatigue) the worker should be removed immediately from work activities and isolated on site.
- If testing is available on site, the worker should be tested on site. If a test is not available at site, the worker should be transported to the local health facilities to be tested (if testing is available).
- If the test is positive for COVID-19 or no testing is available, the worker should continue to be isolated. This will either be at the work site or at home. If at home, the worker should be transported to their home in transportation provided by the project.
- Extensive cleaning procedures with high-alcohol content disinfectant should be undertaken in the area where the worker was present, prior to any further work being undertaken in that area. Tools used by the worker should be cleaned using disinfectant and PPE disposed of.
- Co-workers (i.e. workers with whom the sick worker was in close contact) should be required to stop work, and be required to quarantine themselves for 14 days, even if they have no symptoms.

INTERIM GUIDANCE ON COVID-19

VERSION 1: APRIL 7, 2020

- Family and other close contacts of the worker should be required to quarantine themselves for 14 days, even if they have no symptoms.
- If a case of COVID-19 is confirmed in a worker on the site, visitors should be restricted from entering the site and worker groups should be isolated from each other as much as possible.
- If workers live at home and has a family member who has a confirmed or suspected case of COVID-19, the worker should quarantine themselves and not be allowed on the project site for 14 days, even if they have no symptoms.
- Workers should continue to be paid throughout periods of illness, isolation or quarantine, or if they are required to stop work, in accordance with national law.
- Medical care (whether on site or in a local hospital or clinic) required by a worker should be paid for by the employer.

(i) CONTINUITY OF SUPPLIES AND PROJECT ACTIVITIES

Where COVID-19 occurs, either in the project site or the community, access to the project site may be restricted, and movement of supplies may be affected.

- Identify back-up individuals, in case key people within the project management team (PIU, Supervising Engineer, Contractor, sub-contractors) become ill, and communicate who these are so that people are aware of the arrangements that have been put in place.
- Document procedures, so that people know what they are, and are not reliant on one person's knowledge.
- Understand the supply chain for necessary supplies of energy, water, food, medical supplies and cleaning equipment, consider how it could be impacted, and what alternatives are available. Early pro-active review of international, regional and national supply chains, especially for those supplies that are critical for the project, is important (e.g. fuel, food, medical, cleaning and other essential supplies). Planning for a 1-2 month interruption of critical goods may be appropriate for projects in more remote areas.
- Place orders for/procure critical supplies. If not available, consider alternatives (where feasible).
- Consider existing security arrangements, and whether these will be adequate in the event of interruption to normal project operations.
- Consider at what point it may become necessary for the project to significantly reduce activities or to stop work completely, and what should be done to prepare for this, and to re-start work when it becomes possible or feasible.

(j) TRAINING AND COMMUNICATION WITH WORKERS

Workers need to be provided with regular opportunities to understand their situation, and how they can best protect themselves, their families and the community. They should be made aware of the procedures that have been put in place by the project, and their own responsibilities in implementing them.

- It is important to be aware that in communities close to the site and amongst workers without access to project management, social media is likely to be a major source of information. This raises the importance of regular information and engagement with workers (e.g. through training, town halls, tool boxes) that emphasizes what management is doing to deal with the risks of COVID-19. Allaying fear is an important aspect of work force peace of mind and business continuity. Workers should be given an opportunity to ask questions, express their concerns, and make suggestions.

10

INTERIM GUIDANCE ON COVID-19

VERSION 1: APRIL 7, 2020

- Training of workers should be conducted regularly, as discussed in the sections above, providing workers with a clear understanding of how they are expected to behave and carry out their work duties.
- Training should address issues of discrimination or prejudice if a worker becomes ill and provide an understanding of the trajectory of the virus, where workers return to work.
- Training should cover all issues that would normally be required on the work site, including use of safety procedures, use of construction PPE, occupational health and safety issues, and code of conduct, taking into account that work practices may have been adjusted.
- Communications should be clear, based on fact and designed to be easily understood by workers, for example by displaying posters on handwashing and social distancing, and what to do if a worker displays symptoms.

(k) COMMUNICATION AND CONTACT WITH THE COMMUNITY

Relations with the community should be carefully managed, with a focus on measures that are being implemented to safeguard both workers and the community. The community may be concerned about the presence of non-local workers, or the risks posed to the community by local workers presence on the project site. The project should set out risk-based procedures to be followed, which may reflect WHO guidance (for further information see [WHO Risk Communication and Community Engagement \(RCCE\) Action Plan Guidance COVID-19 Preparedness and Response](#)). The following good practice should be considered:

- Communications should be clear, regular, based on fact and designed to be easily understood by community members.
- Communications should utilize available means. In most cases, face-to-face meetings with the community or community representatives will not be possible. Other forms of communication should be used; posters, pamphlets, radio, text message, electronic meetings. The means used should take into account the ability of different members of the community to access them, to make sure that communication reaches these groups.
- The community should be made aware of procedures put in place at site to address issues related to COVID-19. This should include all measures being implemented to limit or prohibit contact between workers and the community. These need to be communicated clearly, as some measures will have financial implications for the community (e.g. if workers are paying for lodging or using local facilities). The community should be made aware of the procedure for entry/exit to the site, the training being given to workers and the procedure that will be followed by the project if a worker becomes sick.
- If project representatives, contractors or workers are interacting with the community, they should practice social distancing and follow other COVID-19 guidance issued by relevant authorities, both national and international (e.g. WHO).

6. EMERGENCY POWERS AND LEGISLATION

Many Borrowers are enacting emergency legislation. The scope of such legislation, and the way it interacts with other legal requirements, will vary from country to country. Such legislation can cover a range of issues, for example:

- Declaring a public health emergency

INTERIM GUIDANCE ON COVID-19

VERSION 1: APRIL 7, 2020

- Authorizing the use of police or military in certain activities (e.g. enforcing curfews or restrictions on movement)
- Ordering certain categories of employees to work longer hours, not to take holiday or not to leave their job (e.g. health workers)
- Ordering non-essential workers to stay at home, for reduced pay or compulsory holiday

Except in exceptional circumstances (after referral to the World Bank's Operations Environmental and Social Review Committee (OESRC)), projects will need to follow emergency legislation to the extent that these are mandatory or advisable. It is important that the Borrower understands how mandatory requirements of the legislation will impact the project. Teams should require Borrowers (and in turn, Borrowers should request Contractors) to consider how the emergency legislation will impact the obligations of the Borrower set out in the legal agreement and the obligations set out in the construction contracts. Where the legislation requires a material departure from existing contractual obligations, this should be documented, setting out the relevant provisions.

Annexure V: Outline of ARAP

Abbreviated Resettlement Plan covers the following elements:

- Census survey of displaced persons and valuation of assets;
- Description of compensation and other resettlement assistance to be provided;
- Institutional arrangements and consultations with affected people about acceptable alternatives;
- Existing legal and policy framework for land acquisition;
- Institutional responsibility for implementation and procedures for grievance redress;
- Arrangements for monitoring and implementation; and
- Timetable and budget.